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# The Effects of Using an Information Literacy Model on the Information Seeking Behavior Of Sixth-Grade Students

Jessica L. Kohout-Tailor  
*University of South Carolina - Columbia*

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THE EFFECTS OF USING AN INFORMATION LITERACY MODEL ON THE  
INFORMATION SEEKING BEHAVIOR OF SIXTH-GRADE STUDENTS

by

Jessica L. Kohout-Tailor

Bachelor of Arts  
Wofford College, 2005

Master of Library and Information Science  
University of South Carolina, 2011

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Submitted in Partial Fulfillment of the Requirements

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Accepted by:

Yasha Jones Becton, Major Professor

Clayton Copeland, Committee Member

Aisha Haynes, Committee Member

Linda Silvernail, Committee Member

Cheryl L. Addy, Vice Provost and Dean of the Graduate School

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## DEDICATION

I want to first give thanks to God for guiding and giving me the strength and courage to pursue this dream. I dedicate this dissertation to all of my family and friends who have supported and encouraged me on this journey. I want to recognize my husband Bhavin, who is my partner and has been beside me throughout this process. Thank you for your encouragement, advice, and for providing me with the space and time I needed to complete this task. I want to recognize my parents, who cheered me along and instilled in me the importance of education. Lastly, I would like to dedicate this work to my Grandma. Although you are no longer physically here, I know you would be proud of me for reaching this goal. Your faith, independence, and value of education continue to inspire me.

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*“Make a joyful noise unto the Lord, all the earth! Serve the Lord with gladness; come before His presence with singing. Know that the Lord, He is God; it is He who has made us and not we ourselves; we are His people, and the sheep of His pasture.”*

*(Psalm 100: 1-3)*

## ABSTRACT

This action research study describes how teaching an information literacy model affects the information behavior of sixth-grade students. The theoretical framework that supported this study was Carol Kuhlthau's Information Search Process or ISP (1989). This study used a sequential mixed-methods design to examine the following questions: "How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?" The study also explored the effects the model had on students' affective behavior through the second research question: "How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?" The participants of this study included one sixth-grade social studies class, comprised of 26 students. Data collection instruments included pre- and post-questionnaires, interviews, and participant observations. Results of this study indicated that there was a statistically significant increase in the self-efficacy and confidence levels of students after using the Simple Four model (Alewine, 2006). There was not a statistically significant decrease in the anxiety levels of students after using the model. Students found the model beneficial during their research tasks with the organization of their information, help in understanding and remembering sources, a reduction in negative feelings, metacognition, and the revision of their work.

*Keywords: information literacy, information literacy models, research models, The Simple Four Model, middle school*

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## LIST OF ABBREVIATIONS

ICT .....	Information Communication Technology
ISP .....	Information Search Process
ISTE .....	International Society of Technology in Education
SCDE .....	South Carolina Department of Education

## CHAPTER 1

### INTRODUCTION

Across professional and scholarly literature, there are various definitions of information literacy. The American Library Association (ALA) (1989) defines information literacy as the ability to “recognize when information is needed and [to be able] to locate, evaluate, and use effectively the needed information” (para.2). Information literacy is also commonly used as an umbrella term that includes digital, visual, and media literacies, as well as academic literacy information skills and data management (Klomsri & Tedre, 2016). Klomsri and Tedre deconstruct the components of information literacy and describe digital, visual, and media literacies as an individual’s ability to read, write, and interact with digital sources effectively using information communication technology, or ICT. Academic literacy pertains to the ability to find and locate resources to help meet academic information tasks, while information skills and data management include the processes by which an individual interacts with and communicates information (Klomsri & Tedre, 2016). Some authors may find disagreements with these definitions of information literacy (McNicol, 2015).

Various organizations have created more suitable definitions; a more universal one from the High Level Colloquium on Information Literacy and Lifelong Learning states that “information literacy empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social,

occupational and educational goals” (as cited in McNicol, 2015, p. 305). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) recognizes the vital role of information literacy in empowering people and in supporting the awareness of projects that help individuals acquire information literacy skills all over the world (UNESCO, 2017). Within the context of young people, information literate students are avid readers, critical thinkers, creative thinkers, interested learners, organized investigators, effective communicators, responsible information users, and skilled users of technology (Thomas, Crow, & Franklin, 2011).

Information literacy, whether seen as an ability or a set of behaviors, is essential in the workplace, in academic settings, and in the personal lives of all individuals. In the Information Age, information is the currency of our nation and research skills are vital for students to become productive citizens (Agle, 2011). The Partnership for 21<sup>st</sup> Century Learning or P21 (2016), comprised of business, educational, community, and governmental leaders, identified information, media, technology, and critical thinking skills as necessary to becoming successful in work, life, and citizenship. Thomas, Crow, and Franklin (2011) concluded that the new millennium’s professional focus has been on the information and media literacy aspects of education, business, and government. Information literacy skills are also necessary for lifelong learning, as learners deepen their exploration with mastered content and become more self-directed (Association of College & Research Libraries [ACRL], 2016).

Information literacy skills are imperative for students in order to be successful in an information-rich future. However, research shows that students are ill equipped for the information literacy demands of higher education and the workplace (Katz, 2007;



Raish & Rimland, 2016; Saunders, Severyn, & Caron, 2017; Varlejs, Stec, & Kwon, 2014). For decades, librarians have provided information literacy instruction, but the need for teaching information literacy skills is increasing as information becomes more available and more important outside of libraries and other educational settings (Greenwell, 2016).

Information literacy models provide a structure for librarians and teachers to use in their instruction; similarly, they also provide structure for students learning information literacy skills. Wray and Lewis (1995) created the Extending Interaction with Texts (EXIT) model to help teach children how to learn with texts in 10 stages. Nasset (2013) developed the Preparing, Searching Using (PSU) model and the Beginning, Acting, Telling (BAT) model based on her observations of the information seeking behaviors of students and the consideration of information literacy instruction. She created the PSU model for teachers and older students to use when working with information, while her BAT model was suited for younger students. Eisenberg and Berkowitz (1990) designed the Big6 and Super3 models for students in the K-12 setting, with the Super3 intended for younger students. As their numeric titling suggests, the Big6 model includes six stages and the Super3 model has three. The Big6 and Super3 models are process models for how to solve information problems, and the Big6 is the most used model for information literacy instruction in schools worldwide (Baji, Bigdeli, Parsa, & Haeusler, 2017). The Simple Four model (Alewine, 2006) includes four stages and combines two of the steps from the Big6 model, the combination of which simplifies

the research process in a student-friendly way and retains its usefulness and relevancy for students to use in future information tasks.

### **Statement of the Problem of Practice**

The identified Problem of Practice arises from the students' lack of preparation and readiness to succeed in higher education and in the workplace with regards to information literacy skills (Katz, 2007; Raish & Rimland, 2016; Saunders, Severyn, & Caron, 2017; Varlejs, Stec, & Kwon, 2014). Students need to learn information literacy skills well before they enter high school or the workplace, and information literacy instruction at the middle school level can prepare students for postsecondary education and future career endeavors. The content standards for middle school students in South Carolina include research or problem-solving skills in English Language Arts, science, social studies, and mathematics (South Carolina Department of Education [SCDE], 2011; SCDE, 2014; SCDE, 2015a; SCDE, 2015b). In addition, many states use Common Core State Standards that already have research skills embedded throughout them (Morris, 2012).

Research tasks are an integral part of the curriculum at the participating middle school of this action research study. Midlands Middle School is an Expeditionary Learning (EL) school, where all students experience "learning expeditions" that include original research and case studies. Outside of these learning expeditions, research assignments are prevalent among content areas throughout the year. Research assignments for students can vary from fact-finding, inquiry projects, or traditional research projects, such as a research paper. Teacher and student feedback, as well as personal observations from the researcher, provided evidence that many students struggle

with the research process at Midlands Middle School. In particular, sixth-grade teachers have voiced their concerns to the researcher about the lack of information literacy skills that students retain from elementary school.

There can be an array of reasons why students display difficulty with research assignments, such as feeling frustrated due to their unfamiliarity with an assignment or overwhelmed when faced with an information need (Kuhlthau, 1985, 1988, 1989, 1991). Difficulties may also arise with language, resource, or information communication technology (ICT) anxiety, lack of content knowledge, or shallow interaction with information sources (Large, Nasset, & Beheshti, 2008; Naveed & Ameen, 2016). Data from an annual test given to fifth and eighth-grade students in the school district reinforced the experiences of the researcher, as the results indicated that students at Midlands Middle School, as well as students across the district, lacked research strategies and information literacy skills (Learning.com, 2016). The school district adopted this test from a statewide assessment that aligns with the International Society for Technology in Education's (ISTE) *ISTE Standards for Students* (2007) (P. Hanks, personal communication, September 30, 2016). At the end of the 2015-2016 school year, fifth-grade students at the three elementary schools that feed into Midlands Middle School took this assessment and scored 86.85%, 86.14%, and 86.0% proficiency for Standard 3: Research and Information Fluency (P. Hanks, personal communication, September 30, 2016).

Eighth-grade students at Midlands Middle School also took a *21<sup>st</sup> Century Skills Assessment* test at the end of the academic year, provided by Learning.com. This assessment aligned with the *ISTE Standards for Students* (2007), and students were tested

on all four indicators of the Research and Information Fluency standard. Although the assessment included only eighth-grade students at the participating school, the results showed that the majority of students at the end of their middle school career had “Basic” research and information fluency skills, compared to “Proficient” or “Advanced” skills as described by the assessment (Learning.com, 2016). Table 1.1 shows how students scored on the assessment (See Appendix B for detailed assessment results).

Table 1.1

*Research and Information Fluency Scores by Student Numbers*

Below Basic	Basic	Proficient	Advanced	Student Total
7	151	96	51	301

This action research study explored the area where students scored the lowest within Standard 3: Research and Information Fluency (ISTE, 2007). The two indicators of Standard 3 (ISTE, 2007) include:

3a. Plan strategies to guide inquiry

3b. Locate, organize, evaluate, synthesize, and ethically use information from a variety of sources and media.

The ISTE standards were revised in 2016 and these indicators now state:

3a. Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

3b. Students evaluate the accuracy, perspective, credibility, and relevance of information, media, data or other resources.

The researcher believes that the problem of practice exists because information literacy and research skills are rarely explicitly taught outside of the English Language

Arts (ELA) classrooms. A lack of time, the need for professional development in information literacy skills instruction, and a shortage of resources are all barriers that prevent teachers from adequately teaching and assessing information literacy skills in the classroom (Asselin, 2017; Probert, 2009). Without the collaboration of the school librarian, teachers may never teach or assess these research and information literacy skills outside of the ELA content area. At Midlands Middle School, the level of collaboration with the school librarian ranges from frequent to rarely or never used. Information literacy skills are seldom taught, reinforced, or assessed outside of collaborations with the school librarian.

### **Research Questions**

To further examine this problem of practice, the researcher asked students to use the Simple Four information literacy model (Alewine, 2006) during their research tasks to understand how the model might influence students' information seeking behavior. The researcher also sought to examine the effects on students' affective behaviors when using the information literacy model. Specifically, the researcher wanted to find how the students' use of the information literacy model might affect their confidence and anxiety levels during the research process. The research questions that this action research study sought to answer were as follows:

- 1) How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?
- 2) How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?

## **Theoretical Framework**

The theoretical framework of this study is Carol Kuhlthau's Information Search Process (ISP). Kuhlthau (2016) developed the ISP to explain the information seeking behaviors of young people, including the cognitive, affective, and physical actions of students as they sought information. The ISP model is a six-step iterative process developed from empirical research with students. Kuhlthau asked students what they were feeling and what they were thinking during different points in their researching for a school assignment (Beheshti, Cole, Abuhimed, & Lamoureux, 2015). She labeled these feelings and then correlated those thoughts and feelings to information seeking actions (Kuhlthau, 2004). What she found was that the students' gap in knowledge incited uncertainty, and this drove them to the act of information seeking (Beheshti et al., 2015).

## **Purpose of Study**

The purpose of the present action research study was to examine the effects of teaching an information literacy model to students in accordance with the identified Problem of Practice for this Dissertation in Practice. This action research study explored the potential benefits of implementing the Simple Four model (Alewine, 2006) with sixth-grade students. If students have an information literacy model to follow, this could help those who have difficulties with the steps of the research process. If classroom teachers in all content levels used the same information literacy model, the hope is that students would view the model as a tool for their information seeking needs across content and grade levels. The adoption of this model would support the school's efforts in implementing successful learning expeditions, as it would help teachers create stronger

research projects within case studies. It would also help students develop metacognition skills, making the research process simpler for them.

Many information literacy models exist for educators to use in helping students during the information seeking process. This action research study used an information literacy model created for students in South Carolina called the Simple Four (Alewine, 2006). Other models employ varying numbers of stages, anywhere from three to six or more stages. The Simple Four model (Alewine, 2006) has four phases and presents a set of questions for students to think about and answer as they go through the research process (See Appendix A for an overview of the Simple Four model). The purpose of using the Simple Four model (Alewine, 2006) in this study was to provide research on the model, as there are currently no known documented studies in scholarly literature that have used the Simple Four model (Alewine, 2006) with students.

Unlike other studies on information literacy models, this study explored the effects of the model on student behaviors, confidence, and anxiety from the student perspective. Although the participating middle school does not currently use an information literacy model, research tasks are common throughout the curriculum. From the researcher's experience and conversations with teachers, students at the Midlands Middle School often struggle with research assignments. The fundamental purpose of this study was to examine how sixth-grade students' use of the Simple Four model (Alewine, 2006) affects how they use and think about information during an information-seeking task. The study aimed to understand how the Simple Four model (Alewine, 2006) helped students when assigned research tasks so that the school could consider adopting a common information literacy model across the curriculum. The purpose of

the study was to also contribute to the scholarly conversation about information literacy models and specifically address the lack of research on the Simple Four model (Alewine, 2006) in the professional literature.

### **Overview of Methodology**

The researcher used action research methods instead of traditional research methods to improve educational practices, empower teachers, develop teachers professionally, and to connect theory to practice (Mertler, 2014). While traditional research seeks to understand and explain issues or discover universals, action research addresses local level problems with possible solutions (Allender, 1986; Mertler, 2014). Traditional researchers try to be objective in their studies and are removed from the environment they are studying, while action research includes the educator addressing “a real school situation with a view to improve the quality of actions and results within it” (Mertler, 2014, p. 13). Additionally, traditional research or university research has a focus of control/prediction/impact/explanation, whereas the focus of action research is to provide insights into teaching so that changes can be made (Dana & Yendol-Hoppey, 2014). While the ownership and impact of university research are on the outside and are rather broad, action research has ownership on the inside with effects at the local level (Dana & Yendol-Hoppey, 2014). This study has the characteristics of action research and includes it “being critical, evaluative, systematic, strategic, participatory, collegial, collaborative, self-reflective about practice, empowering, emancipatory, and having theory inform practice and practice inform theory” (Melrose, 2001, p. 161).

Because action research methodology is very timely and can begin anytime, it allows the researcher to address a problem at the local level and can provide immediate



results (Mertler, 2014). By conducting this action research study, the researcher was able to better understand and improve educational practices, build relationships with colleagues, and provide a new approach to a problem that existed in the researcher's educational practices (Mertler, 2014). The methodology also permitted the researcher to be an active member of the group, as she participated in the research with the student participants (Melrose, 2001).

The study took place during the Spring 2018 semester over a 6-week period. The researcher collaborated with one sixth-grade social studies teacher and her class of 26 students to conduct the study. The study had a mixed-methods design, as the researcher first collected quantitative data and then collected qualitative data that helped to explain or support the quantitative results. Participants answered a pre-questionnaire at the beginning of the study and a post-questionnaire at the end of the study. This survey method collected quantitative data while the researcher used participant interviews and observations to collect qualitative data.

At the beginning of the 6-week period, the researcher gave students an overview of the research study and a pre-questionnaire that collected their perceptions of the research process, how confident they felt when given a research task, and their anxiety levels during the research process. During the first week of the study, the classroom teacher introduced them to the first research task and the researcher taught the Simple Four model (Alewine, 2006) using a graphic organizer that the researcher created. In week two, the researcher reviewed the Simple Four model (Alewine, 2006) and students continued to work on their research task. During the first two weeks of the study, students worked on their research task and completed a Google Form that guided them

through the Simple Four model (Alewine, 2006) each day. Throughout this time, the researcher observed participant behaviors and recorded field notes. The researcher also tabulated the pre-questionnaire scores from students to identify students to interview with the lowest self-efficacy, lowest confidence, and highest anxiety scores. In weeks three and four, the researcher interviewed the identified students. In week five, the teacher assigned students a second research task. The researcher continued to teach the Simple Four model (Alewine, 2006) and students completed a Google Form that addressed each stage of the Simple Four each day. In week six, the researcher interviewed the same students again, and all students completed a post-questionnaire. After the 6-week period, the researcher shared the results with the student participants.

### **Significance of Study**

This study explored the theory of information literacy models and used a model designed specifically for the students of South Carolina to investigate its effects on the information seeking and affective behaviors of students. There are no known research studies involving this information literacy model in library and information science literature. The opportunity to conduct this study allows the researcher to improve the curriculum and instruction as a school librarian, and to share the results with administrators, classroom teachers, and other school librarians.

This study was also used as a form of school library advocacy, as it illustrates the important role the school library program and school librarian play in student learning, instruction, and curriculum. As technology continues to expand and information becomes readily available, effective school library programs will continue to perform an essential function in the development of informationally literate students. Public school

libraries are currently in crisis, as the current federal administration may eliminate key funding programs that help support them (Christou, 2017). Even though funding for school libraries comes from state and local taxes, it is imperative for library programs to show their impact on student learning and achievement so that stakeholders understand the value of school libraries and school librarians. Various assessment strategies and data collection can indicate the effects school libraries have on student achievement (Lance & Kachel, 2018).

Effective school library programs are a result of careful planning and reflection (Robins, 2015). Action research allows the researcher to reflect in a systematic and evidence-based way that can be used to guide decisions regarding instruction and self-evaluation (Robins, 2015). For the school library program at Midlands Middle School to be most effective, this action research study is imperative for the sake of student learning, the professional growth of the researcher, and school library advocacy.

### **Limitations of Study**

The study is limited in sample size (N= 26) and time constraints (6 weeks). The study took place with one class of students within a Social Studies class, in one grade level, and at one middle school. The small sample size and the fact that the sample is limited to one grade level at one school all limit the results. The 6-week length of the study also limits its depth and results. These limitations prevent the generalization of the results. The intended application of the results is for the researcher, as action researcher

is “done by teachers for themselves” (Mertler, 2014, p. 4). It is a systematic way for the researcher to examine a focus area to improve her teaching practices.

### **Dissertation Overview**

This dissertation is divided into five chapters. Chapter 1 provides the context of the study and the need for the study to take place. Chapter 2 provides a review of the literature on the fundamental concepts behind the study. This includes the information literacy skills of students, the information seeking behaviors of students, classroom support of information literacy skills, the role of school librarians, and an exploration of various information literacy models. Chapter 3 describes the setting of the study and the methods used to collect data. Chapter 4 presents the findings of the study and the interpretation of results. Lastly, Chapter 5 includes the action plan for sharing the results and the implications for further research.

### **Definition of Terms**

The terms below are defined and used in the study on information literacy models and information seeking behavior.

**Action research:** Research conducted by educators that has a systematic process of inquiry and leads to improvement of school conditions (Mertler, 2014).

**Collaboration:** The act of working with another person. In this Action Research Study, collaboration refers to the school librarian/researcher creating lesson plans and working with the classroom teacher for the information literacy model to be taught, reinforced, and assessed.

**EL Education:** Expeditionary Learning (EL) Education is an educational organization and learning philosophy that encourages learning by doing. The core practices of EL

Education include curriculum, instruction, assessment, culture and character, and leadership (EL Education, n.d.).

**Expeditions:** In EL Education, the curriculum is organized by expeditions, which are in-depth studies that include real-world connections (EL Education, n.d.). Expeditions involve students conducting original research, employing critical thinking and problem-solving skills, and include some component of character development (EL Education, n.d.).

**Information literacy:** The ability to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ALA, 1989).

**Information literacy models:** Instructional models used by teachers, librarians, and students that guide students with in to approach and think through a problem, research task, or information seeking task. Other terms used to describe this include inquiry model, information problem-solving model, or research model.

**Information seeking behavior:** The cognitive and physical actions that individuals use or display when looking for information.

## CHAPTER 2

### LITERATURE REVIEW

#### **Overview of Study**

The Problem of Practice examined in this action research study derives from the issue that middle school students lack information literacy skills and that high school students are not prepared to meet the information demands of the workplace or college (Gross & Latham, 2012; Inskip, 2015; Katz, 2007; Raish & Rimland, 2016; Saunders, Severyn, & Caron, 2017; Varlejs, Stec, & Kwon, 2014). There is a growing consensus that information literacy is a necessity in the workplace, and there is evidence that employers and employees value information literacy skills (Forster, 2017; Travis, 2011; Weiner, 2011).

Information literacy skills can be found throughout various content standards at the middle school level. South Carolina standards for middle school students include research and inquiry skills in English Language Arts, science, social studies, and mathematics (South Carolina Department of Education [SCDE], 2011; SCDE, 2014; SCDE, 2015a; SCDE, 2015b). Common Core State Standards, which are used by many states in the United States, have research integrated throughout the standards (Morris, 2012). Despite these facts, there is ample evidence of a need for information literacy skills at the local level. A 2016 district assessment showed that students at Midlands Middle School struggled with the information literacy process, especially with locating

and accessing information, information problem-solving and decision making, and in knowing how to use information (Learning.com, 2016).

This review of literature is organized into six sections. The review begins with identifying the theoretical framework used to examine the information seeking behavior of young people, followed by a section on information literacy models. The next four sections include discussions of the following themes: *The Information Literacy Skills of Students*, *The Information Seeking Behaviors of Students*, *Classroom Support for Information Literacy*, and *The Emerging Role of School Librarians*. Finally, the review concludes with a *Summary*.

### **Theoretical Framework**

This action research study has a theoretical basis in Carol Kuhlthau's (1989, 2004, 2016) theory of the Information Search Process. Kuhlthau's research explored the information seeking behaviors of young adults and detailed the development of her Information Search Process (ISP) model. The ISP model explains how students approach the research process, as well as explaining their feelings and thoughts with each stage. Kuhlthau's work illustrates that uncertainty drives students to act on their information need.

According to Kuhlthau (2004), the first stage in the Information Search Process is the initiation stage. Through multiple studies, Kuhlthau (1985, 1988, 1989, 1991) found that students begin by feeling uncertain because they may not be familiar with the assignment or what to do with the assignment they have received. Kuhlthau notes that it is in stage that students to prepare for the decision of selecting a topic. The thoughts of students at this stage include thinking about the assignment, understanding the task,

connecting to background knowledge, and thinking about possible topics (Kuhlthau, 2004). According to Kuhlthau, the physical actions of students here include speaking with others and browsing for sources.

In her studies Kuhlthau (2004) found that selection is the second stage of the information search process; in this stage students are in the process of topic selection. Students feel optimistic when they begin to think of how to approach the task. Their cognitive actions include contemplating topics against the assignment, their interests, the time they have to work on the task, and the information available (Kuhlthau, 2004). They are also processing possible topics and the outcomes of those topics, as well as choosing a topic. Feelings that students might experience include confusion, anxiety, happiness (after selecting a topic), and anticipation of the research task. Kuhlthau found that the apprehension and uncertainty continued until students chose a topic. If students did not choose a topic quickly, their anxiety increased. When students are in this stage, their actions may include conducting a preliminary search of information, skimming and scanning for an overview for alternative topics, and talking to others about other options (Kuhlthau, 2004).

Kuhlthau (2004) describes the third stage as exploration, where the user feels confusion or doubt, and this is when users may have difficulty expressing their information needs. The task in this stage is to investigate general information and narrow down the topic to a particular focus (Kuhlthau, 2004). According to Kuhlthau, this stage is consistently the most challenging stage for many students and feelings of confusion, doubt, and uncertainty characterize this stage. Students may find this stage threatening because the information they encounter often does not match with previously held



constructs and information can vary from one source to the next (Kuhlthau, 2004).

Because of this, Kuhlthau notes that users may feel a sense of inadequacy in themselves or discouragement with the systems they are using. It is in this stage that some students may want to stop the searching process. In exploration, students are locating relevant information, reading about their topic, taking notes, and creating citations (Kuhlthau, 2004).

The fourth stage, formulation, is where users form a focus of all the information they have found (Kuhlthau, 2004). Kuhlthau (2004) notes that it is in this stage that many often experience a turning point. As the user defines the topic or when constructs become more evident to the user, the user's confidence increases (Kuhlthau, 2016). Kuhlthau suggests that the cognitive actions of students include choosing ideas in the information found to form a focus while predicting the outcome of the focus with personal interests and thinking through requirements of the assignment, resources available, and the time given to complete the assignment. Other feelings included in this stage are optimism and confidence in their ability to complete the task (Kuhlthau, 2004). When users do not form a focus, Kuhlthau found that they often experience difficulty in the rest of the search process, including when they present their findings. The physical actions of users include reading their notes for themes (Kuhlthau, 2004).

Kuhlthau (2004) describes the fifth stage as collection, or when students gather information and organize notes. In this stage, the task is for the user to gather information about the chosen topic or focus. The thoughts that users have include seeking information to support their topic, defining and extending the topic through information, collecting relevant information, and organizing the information into notes

(Kuhlthau, 2004). Kuhlthau characterizes the feelings of users as the realization of the amount of work that has to be completed, their confidence in their ability to complete the assignment, and an increased interest in the project. Kuhlthau found that users had a more definite sense of direction and could articulate their need for relevant and focused information to librarians and systems. The physical actions of users include using the library to collect relevant information, using comprehensive search strategies across various materials, and asking for help from the librarian (Kuhlthau, 2004).

The sixth stage, presentation, is where users conclude their search for information. It is in this stage that the user feels relief if the process has gone well or disappointment if it has not (Kuhlthau, 2016). Users' thoughts include identifying the need for any additional information, thinking about their time limit, and exhausting their resources (Kuhlthau, 2004). The physical actions of students include consulting the sources they used for anything they may have overlooked and confirming information and citations (Kuhlthau, 2004).

Kuhlthau (2004) described the ISP model as an iterative process where stages can overlap and can blend. The ISP model explains that the user's uncertainty stems from a lack of knowledge of how to use sources and technology. However, uncertainty is central to the learning process where students create meaning through their synthesis of a topic or problem (Genius, 2007). The ISP model benefits information users with their understanding of the search process, and liaisons and systems are challenged to improve the search process in the early stages (Genius, 2007).

This ISP model provides the framework for this action research study. The research questions center on how the Simple Four information literacy model (Alewine,

2006) supports students in the formative stages of the research process. As seen in Kuhlthau's (1985, 1988, 1989, 1991) work, students will feel a range of emotions when seeking information, including uncertainty, doubt, and frustration. The researcher used the Simple Four information literacy model (Alewine, 2006) to explore how it might affect these negative emotions and support students in the research process. The Simple Four model (Alewine, 2006) is not just steps in a research process; rather, it is a guide for students about how to think about information and how to construct their new knowledge efficiently.

### **Information Literacy Models**

Information literacy models differ from information seeking models because of their audience and purpose. Information seeking models attempt to explain how a group of people find information. Librarians, teachers, and students use information literacy models that are intended to support students during the research process (Nesset, 2013). Information literacy models are more prescriptive in their steps and are used for instructional purposes, whereas information seeking models are more diagrammatic and are used to explain behavior (Nesset, 2013). A discussion of the historical perspectives of information literacy models, an explanation of the models, and a discussion of studies involving information literacy models will follow.

### **Historical Perspectives**

According to Wilson (1999), research on information behavior models has origins that go back to the Royal Society Scientific Information Conference of 1948. William Paisley was one of the earliest advocates of the behavioral approach to seeking information as he claimed that "information science meets behavioral science in the study

of information needs and uses” (as cited in Savolainen, 2007, p. 1). Tom Wilson, one of the most influential advocates on the science on information behavior, introduced an early information behavior model in 1981 (Savolainen, 2007). Wilson’s model of 1981 assumed that an information need stemmed from a more primary need, such as a physiological, cognitive, or affective need, and that the enquirer would face barriers when seeking information (Wilson, 1999). In Wilson’s model, the user must make demands of an information source, and the user will either be successful or fail (Wilson, 1999). If the user is successful, the individual will use the information to meet his/her need, and if the user fails, the user will repeat the process (Wilson, 1999). Wilson continued to refine his model, and his revised version described the processes and outcomes of a user’s information need and behavior with the information. In this model, the user faces an information need, which transforms into an activating mechanism that causes information seeking behaviors. Contributing variables include psychological, demographic, role-related or interpersonal, environmental, or source characteristics (Wilson, 1999). These activating mechanisms include the risk/reward theory and social learning theory with self-efficacy (Wilson, 1999). From these mechanisms, the information seeking behavior might include passive attention, passive search, active search, and ongoing search (Wilson, 1999). Wilson categorized information literacy models under active search because they provided pathways for individuals to acquire and use information.

In 1988, Stripling and Pitts published the first information literacy model in the United States (Loertscher, 2008). Stripling and Pitts developed the Research Process Model for teachers and school librarians to teach students how to think about research. Their model addressed the importance of the thought process during information seeking.

The basis for the model asks, “If teachers and library media specialists accept the importance of students’ *thinking* during research, then they must also accept the responsibility for teaching thinking skills” (Stripling & Pitts, 1988, p. 19). Their model is a “thinking frame for research (which serves as a guide for *how* to think rather than for *what* to think) which is the *research process*” (Stripling & Pitts, 1988, p. 19). Shortly after, Eisenberg and Berkowitz (1990) created the Big6 model, a six-step process to help students, teachers, and school librarians with a variety of information activities (Wolf, Brush, & Saye, 2003). The Big6 is one of the best-known and most commercialized information problem-solving models used (Wallace, 2011).

According to Loertscher (2008), it was in the late eighties that school library programs began to shift their focus from reading to teaching the research process. The American Association of School Librarians (AASL) created standards for information literacy for school librarians to use in their library programs in 1988 called *Information Power I*, and *Information Power II* followed in 1998 (Dickinson, 2006; Loertscher, 2008). In 2007, new standards replaced *Information Power*. The foundational documents and information literacy standards that guided school librarians in K-12 settings were AASL’s *Standards for the 21<sup>st</sup> Century Learner* (2007) and *Standards for the 21<sup>st</sup> Century Learner in Action* (2009). These standards emphasized the research process, used inquiry as a way to teach skills, dispositions, and reflective/assessment practices. AASL launched new standards and guidelines in the fall of 2017. According to AASL (2017), the previous AASL standards will not go away, as the new standards and guidelines incorporate elements from them. School librarians also use The International Society for Technology in Education’s (ISTE) (2016) *2016 Standards for*

*Students*, which includes information literacy and research strands in its standards.

Library and information professionals have a history of concerning themselves with how users seek and use information. In school libraries specifically, this has been extended to the information literacy skills of students, whether helping students find resources physically in the library to navigating information in various formats and platforms. School librarians not only teach students how to work with information, but how to think about information so they can use it in an effective, efficient, and ethical way.

The theoretical framework in this review of literature explored Kuhlthau's (1989, 2004, 2016) theory of information seeking behavior; however, it is important to note the historical role that her Information Search Process (ISP) theory had in the information seeking behaviors of users and in information literacy models. Kuhlthau's research stood apart from other information seeking behavior studies, as she collected empirical evidence with students. The collection of evidence took place over two decades of research, and the model has stood the test of time with relevancy (Beheshti, Cole, Abuhimed, & Lamoureux, 2015; Kuhlthau, Heinström, & Todd, 2008). Kuhlthau's work with the Information Search Process is the most internally cited work in the information behavior field (Todd, 2003). Unlike other models, her model used empirical evidence from students and adults and examined information seeking behaviors from the user's perspective (Kuhlthau, 1991).

Inquiry and authentic research use higher-order thinking skills, and there is a thinking process included in this approach (Levitov, 2016). The development of the many research processes and information seeking models over the years serve as a guide for teachers and students to become information literate (Levitov, 2016). According to

Thomas, Crow, and Franklin (2011), “These models are based on the experiences of practicing librarians and [are] designed to improve the educational value of the kinds of information seeking activities typically assigned in the classrooms” (p. 59). These process models use higher-order critical thinking skills and encourage students to ask questions during the research process (Thomas, Crow, & Franklin, 2011). Studies show that both students and teachers benefit from the use of information literacy models (Greenwell, 2016; Herring, 2009; Nasset, 2013; Neuman, Grant, Lee, & Tecce DeCarlo, 2015; Probert, 2009). However, research also indicates that scaffolding may be required for many students to effectively use these models (Nasset, 2013; Neuman et al., 2015).

### **Information Literacy Models and Students**

Librarians have used information literacy models to help scaffold students with information literacy skills for decades. Many models exist, and each model has its strengths and weaknesses. Mike Eisenberg (2008) considers his model, the Big6, the most widely used information literacy model in K-12 education. This information literacy model consists of six stages with two sub-stages under each and is appropriate to use in various environments and situations (Eisenberg, 2008). These six stages include task definition, information seeking strategies, location and access, information use, synthesis, and evaluation. Lin Ching, Yaw-Huei, and Wen-I (2014) used the Big6 model to integrate information literacy skills into the seventh-grade science curriculum, and it helped to increase comprehension of science content and problem-solving skills. For this study, two seventh-grade classes were randomly assigned to be the treatment and the control groups. The same science teacher taught both classes, and the teacher used traditional lecture teaching methods for one class and an inquiry-based science

curriculum embedded with information literacy instruction for the other. The instructional unit lasted 3 weeks and students were given three pre-tests on memory, comprehension, and problem-solving skills. At the end of the instructional unit, students took three post-tests that were the same as the pre-test with items randomized. Although this study shows the effectiveness of using an information literacy model, such as the Big6, Li and Lester (2009) claim that this model leaves out some essential thinking skills regarding the use of information. They note that the model does not ask students to consider what type of sources they should use to seek information, it does not teach students how to select appropriate sources from multi-modal formats, it fails to teach searching methods, or how to synthesize and convert information collected to another product (Li & Lester, 2009).

James Herring (1996, 1999) created the PLUS model, which consists of four inter-related steps: purpose, location, use, and self-evaluation. These steps encourage students to identify a purpose, to locate relevant sources, to use ideas and information effectively, and to self-evaluate on their information skills (Herring, 1996, 1999). Through the use of student questionnaires and semi-structured teacher interviews, researchers found that the PLUS model was helpful for students to complete a physics assignment and students thought the model could be helpful for them to use with other projects in school (Herring, Tarter, & Naylor, 2002). The classroom teacher also found the model helpful and flexible and that it allowed students to be independent in completing their assignment. The work that the students completed was of higher quality than in the past. The teacher thought that students were more confident when working both independently and in groups with the model (Herring, Tarter, & Naylor, 2002). This



2002 study had limitations of working with one age of students in one school and the researchers suggest that semi-structured interviews would have allowed them to go more in-depth with students' feedback on the model (Herring, Tarter, & Naylor, 2002). The researchers suggest that other studies be conducted, not to explore the efficacy of information literacy models, but how models can benefit students (Herring, Tarter, & Naylor, 2002).

The Simple Four (Alewine, 2006) is an information literacy model that consists of the planning, acting, organizing, and reflecting stages. With each stage, students are provided questions to guide them in their thinking process with information. Like the information literacy models previously discussed, it is a non-linear process to help guide students and teachers through inquiry learning and information seeking situations. No research is evident on the effects of using this information literacy model with students. Information literacy is often portrayed as a process that students follow, where students are not asked to reflect on their practice with information literacy skills (Herring, 2009). The Simple Four model (Alewine, 2006) guides students with a set of questions throughout the research process, and it asks students to reflect on their information skills during the process.

Delia Newman (2011) created the I-LEARN model and it both describes the information process and provides a framework for teachers and students to use with information. It includes the stages of identify, locate, evaluate, apply, and reflect. In a 2015 study, two teachers and forty-nine students from the ages of five to eight used the I-LEARN model in an inquiry-based project to learn how this information literacy model addressed the outcomes and processes of learning with information among elementary

aged students (Neuman et al., 2015). Through the use of a teacher survey and a focus group interview with teachers, researchers found that the I-LEARN model did support students in problem-based, inquiry learning, but additional scaffolding was needed from the teachers (Neuman et al., 2015). Teachers reported that the model helped guide students through the research process.

Valerie Nasset (2013) created the BAT model from the information seeking behavior research literature and from evidence collected from her study with third-grade students. She concluded that the information seeking process included three stages: beginning, acting, and telling, and she used visual and mnemonic cues to create the model in the shape of a bat for students to use as a research tool (Nasset, 2013). Through the use of participant observations, informal semi-structured interviews, pre- and post-questionnaires, field notes, and recording classroom sessions with audiotapes, findings revealed that students liked the BAT model because of its visual and mnemonic appeal (Nasset, 2013). However, it was so simplistic that teachers had to intervene frequently to explain or expand on the model. Although some students found the BAT model helpful, Nasset (2013) believed the verbal assistance from the teacher helped the students when using the model.

There are numerous models in addition to the ones described. These process models are intended to help guide the students through academic assignments and tasks that require seeking information. Although models may vary in their number of stages and may have their limitations, they are intended to use the higher-order thinking skills or critical thinking skills that students need to practice and acquire to be successful when

working with the information demands of the 21<sup>st</sup> century. Table 2.1 provides an overview of these information literacy models.

Table 2.1

*Examples of Information Literacy Models*

Name of Model	Developer(s)	Year Created/ Published	Overview	Number of Steps
The Big Six Model	Mike Eisenberg and Robert Berkowitz	1990	1. Task Definition 2. Information Seeking Strategies 3. Location and Access 4. Use of Information 5. Synthesis 6. Evaluation (efficiency)	6
PLUS Model	James Herring	1996	1. Purpose 2. Location 3. Use 4. Self-Evaluation	4
The Simple Four Model	Martha Alewine	2006	1. Plan 2. Act 3. Organize 4. Reflect	4
I-Learn Model	Delia Neuman	2011	1. Identify 2. Locate 3. Evaluate 4. Apply 5. Reflect 6. kNow	6
PSU Model and BAT Model	Valerie Nessel	2013	1. Preparing 2. Searching 3. Using  and  1. Beginning 2. Acting 3. Telling	3

## **Studies Involving Information Literacy Models**

Many studies discuss the use of information literacy models with students or teachers. However, not many studies ask students to evaluate the application of the models, explore the benefits of using the models from a student perspective or examine students' affective experience with information literacy models. This action research study offers new insights with its examination of students' thoughts, feelings, and behaviors concerning an information literacy model. The following studies informed this action research study.

Wolf, Brush, and Saye's (2003) study used a research task where students' experiences and reactions were captured to answer the question "How does Big6 support metacognitive strategies and knowledge management in students?" (p. 6). Researchers collected data through the use of student logs and journals, teacher and student interactions, student work, and post-activity interviews. Wolf, Brush, and Saye found that the results indicated that the Big6 information literacy model might act as a metacognitive scaffold for students completing unfamiliar tasks where they had no prior knowledge of the topic. Students may be able to manage more complex information tasks and subject matter content when teachers provide them with a metacognitive scaffold (Wolf, Brush, & Saye, 2003). Students relied on the scaffold to guide them to make decisions about their work, including managing their time and using resources (Wolf, Brush, & Saye, 2003). Students responded that the model helped them plan their work and they believed that the model could be beneficial for them outside of the social studies classroom. This study informed this action research study in its findings that a model could benefit students in various ways. The focus of Wolf, Brush, and Saye's

2003 study was the cognitive benefits of students using the model, whereas this action research examines how a model affected students' behavior, confidence, and anxiety.

The limitations from the previously discussed study conducted by Herring, Tarter, and Naylor (2002) are essential to the formation of this action research study. The researchers conducted a study where 112 seventh-grade students used the PLUS information literacy model in their physics classroom to evaluate the application of the model. Students completed questionnaires and researchers interviewed the physics teacher and school librarian. Results indicated that students benefited from a structured approach to complete a project and that students perceived the model as helpful to plan, organize, and reflect on their work. The limitations of the study included that student feedback on the model was limited to questionnaires and not semi-structured interviews. The study focused on students' evaluation of each stage of the PLUS model and the overall benefits of the model from the viewpoints of the teacher, librarian, and students. The researchers concluded that additional studies needed to take place in order to understand the benefits to students with using models, not just the efficacy of a particular model. The present action research study expounds on this conclusion to inform educators how a model might benefit students' affective behavior, in addition to gathering students' views of a particular model.

Greenwell (2016) conducted a study that included academic librarians using the I-LEARN model during the instruction of information literacy skills to university students enrolled in a composition and communications course. In the study, librarians saw the I-LEARN model as helpful for a library research guide when designing assignments, but the results showed that there was not a significant difference between those students who

received standard information literacy instruction and those that received instruction with the I-LEARN model (Greenwell, 2016). Even though there was no statistical difference with the use of the model, those that received the I-LEARN instruction did perform better on the given information literacy skills test (Greenwell, 2016). Greenwell employed an experimental group to receive the I-LEARN instruction and a control group to receive the standard instruction. Instruction for both groups took place in one class period, and each group received an information literacy skills test and a citation analysis rubric (Greenwell, 2016). Participants completed a survey to rate their experience using the library research guide, their attitudes, and the value of the in-person instruction. Results of the survey indicated that students viewed the library research guide as helpful to find resources and to better understand the research process, and they thought that the guide would help them in the future (Greenwell, 2016). This action research study is similar to Greenwell's study because the researcher embedded an information literacy model into the curriculum and collected student feedback on the model. Although the age level of students is different in these two studies, they both explore the student benefits of using an information literacy model.

### **Information Literacy Skills of Students**

Higher education and the workplace reflect the information literacy skills of students in K-12 settings. Gross and Latham (2012) found that first-year college students had an inflated sense of their information literacy skills. They discovered that students came to college without the information literacy skills needed to be successful and that students with below-proficient information literacy skills believed they had above-average information literacy skills (Gross & Latham, 2012). Students who tested

proficient in information literacy skills also had the same inflated sense of skills, which suggested that first-year college students may not have the skills they need when they believe they do (Gross & Latham, 2012). In a study for Project Information Literacy Research Report, Head (2013) reported that 74% of first-year students indicated that they found it challenging to select search terms and create search queries, and 57% felt hindered by the number of irrelevant results that their searches produced. Over half of these first-year students (51%) struggled to navigate the sources available to them, and 43% of students reported challenges in synthesizing all of the information they found (Head, 2013). Many first-year college students are not equipped for the writing demands of college work because K-12 education has inadequately prepared them (Kim and Dolan, 2015). Lundstrom and Shrode (2013) discovered that generally college students could not find or narrow down a research topic. Students also had difficulty transitioning from the use of Google to library resources, and students had low levels of willingness to use other resources with the barriers of lack of time, training, and awareness (D'Couto & Rosenhan, 2015). Gordon (2002) reasons that “the idea that the K-12 experience prepares our students for what’s next may be comforting but misleading,” as she found that college students either had not learned or retained the information literacy skills they learned before their arrival at college (p. 17).

Research suggests that there is a disconnect between information literacy skills learned in a school setting and those needed in the workplace (Inskip, 2015). Inskip found through interviews with career services, employers, and other stakeholders that even if information literacy as a concept does not directly transfer to the workplace, employers thought analytical and problem-solving skills, which are components of

information literacy, were vital in the workplace. Other research explores the transferability of information literacy skills from the educational setting to the workplace. Travis (2011) found that recent college graduates valued information literacy skills and perceived them useful in the workplace. Finding relevant sources, critical thinking, evaluating information, problem-solving, innovative thinking and life-long learning abilities were the top skills recent graduates identified as skills they gained in college that they used the most in the workplace (Raish & Rimland, 2016; Travis, 2011). Employers also value their employees' ability to use information in various formats, to synthesize information, use information in practice, and to collaborate with colleagues (Gilbert, 2017).

Higher education and the workplace require information literacy skills. Although some may disagree whether the information literacy skills taught in K-12 or higher education settings transfer to the professional arena, there is a need and desire for both students and employees to be able to interpret, use, understand, and create information effectively and efficiently (ACRL, 2016; Forster, 2017; Travis, 2011; Weiner, 2011).

### **Information Seeking Behaviors of Students**

Children seek information in similar ways and for the same reasons as adults (Large, Nasset, & Beheshti, 2008). Information seeking includes various affective and cognitive behaviors, as well as distinct physical actions. These behaviors and actions illustrate how students may need support when researching or completing an information task.



## **Affective Behaviors**

Trends in the literature show that adults and young people experience similar attitudes and feelings when seeking information for an academic task (Kuhlthau, 1991; Naveed & Ameen, 2016). This affective behavior includes anxiety, confusion, frustration, confidence, and relief.

Although past studies document the user's anxiety with seeking information, they typically categorize this anxiety as stemming from a lack of knowledge of information sources or technologies (Kuhlthau, 1991). Naveed and Ameen (2016) were able to classify anxiety as procedural anxiety, information overload, language anxiety, and thematic anxiety, in addition to resource anxiety, information communication technology (ICT) anxiety, library anxiety, and search anxiety. Although researchers developed these categories of anxiety with postgraduate students, the study illustrates that levels of education do not lessen the anxiety felt when seeking information. In the Information Search Process, Kuhlthau (1991) found that both adolescents and adults experience feelings of apprehension and uncertainty as they begin to initiate the information seeking process. It is at this point when the individual becomes aware that they lack knowledge or understanding (Kuhlthau, 1991). Reasons that students feel difficulty when they begin a task can be related to a lack of knowledge and uncertainty of how to proceed with the task (Kuhlthau, Heinström, & Todd, 2008). Kuhlthau, Heinström, and Todd found that students also felt anxiety, apprehension, and frustration at the mid-point of an academic information seeking task, as well as right before they presented their information at the end of the information seeking process.

Young people experience frustration during the information seeking process due to various barriers. Kuhlthau (1991) identified that users might become frustrated when working with the information systems. Large, Nessel, and Beheshti (2008) identified a lack of linguistic skills and content knowledge as specific challenges that children face when working with information systems. Both children and even adults experience these barriers when searching for information in a digital environment, as they do not have the language skills to identify and use synonyms or understand homonyms or have the ability to correctly spell keywords (Duarte Torres, Weber, & Hiemstra, 2014; Large, Nessel, & Beheshti, 2008; Shenton & Davis 2004). They must also be able to know enough about their topic to remember specific words that represent their information need, as this skill is needed to conduct a keyword search (Large, Nessel, & Beheshti, 2008; Shenton & Davis 2004).

Just as information seekers experience negative emotions, they also experience confidence, optimism, and relief. Kuhlthau (1991) identified that both children and adults felt optimism when information seekers selected a general topic to be explored and began their searches. Exploration in the task assignment can also affect students' confidence. Chung and Neuman (2007) believed that students experienced confidence during the exploratory mode of learning because they could rely on a plethora of digital sources to meet their information needs. Students also feel more confident as they begin to formulate a focused perspective on the topic and when the topic becomes more personalized (Herring, 2009; Kuhlthau, 1991). Confidence continues to grow as students become more interested in the collection of information (Herring, 2009; Kuhlthau, 1991).

Users feel relief when they complete the task and are satisfied with their search (Kuhlthau, 1991).

Although there are positive feelings experienced with the information seeking behaviors of children, the negative feelings associated in the information search process show that students of all ages face difficulties at some point in the process. These affective behaviors are present during the information seeking process both with print and digital environments. Although young people today prefer to use the Web to find information, their skills have not improved over time (Centre for Information Behavior and the Evaluation of Research, 2008).

### **Cognitive Actions**

Engagement and curiosity, effort, and evaluation are also present during the information seeking process of students. Students are more academically engaged when they feel the topics are relevant to them and when they have a choice, as well as when they know that their work matters (Buchanan, Harlan, Bruce, & Edwards, 2016). Crow (2015) found that students across cultures were more intrinsically motivated to seek information when they had a choice in what to research and interest in the topic. Students' curiosity can be a source of motivation for students to explore a topic; however, it can also be a source of frustration when it causes students to take more time to find the information needed for the task (Bowler, 2010). Controlling curiosity is an essential aspect of the information seeking process, as students have to decide when to move on even when they are interested in a topic (Bowler, 2010).

The cognitive efforts of students manifest in the physical actions of information seeking behaviors. Walhout, Oomen, Jarodzka, and Brand-Gruwel (2017) found that

when students received a more complex task, they used more search queries and keywords. With more complex search tasks, students need more time to formulate search queries (Walhout et al., 2017). Students may often rush through the research process, and some students use the same keywords in their information searching (Gregory, 2018). Young people often try to simplify the information seeking task and try to reduce the amount of effort used, such as rarely using more than one source and using similar materials and search methods (Shenton & Davis, 2004; Knight & Mercer, 2015). Students often do not re-evaluate results they find, as they tend to accept the results provided instead of revising their search strategies (Knight & Mercer, 2015; Large, Nessel, & Beheshti, 2008). As they move toward adolescence, children can better think about the context of information use and coordinate their evaluation (Metzger, Flanagin, Markov, Grossman, & Bulger, 2015). Research indicates that many young people do not evaluate the information they find online, but Metzger et al. (2015) found that as children mature, they were better able to use contextual clues to evaluate information.

### **Physical Actions**

Along with the affective experiences and cognitive behaviors that students have while seeking information, they also select and retrieve information in a specific physical way. During the selection phase of ISP, the physical behaviors of students include conferring with others, beginning to conduct preliminary searches for information, and skimming and scanning for alternative search topics (Kuhlthau, 1991). With web search engines, physical selection behaviors include backtracking, scrolling, and navigation of links (Bilal, 2000; Duarte Torres, Weber, & Hiemstra, 2014). Children often used the back button, and they did not use scrolling as much for longer web pages as they did for

shorter webpages (Bilal, 2000; Duarte Torres, Weber, & Hiemstra, 2014). Students also tended to select links at the top of the page, rather than the middle or bottom of the page (Bilal, 2000; Duarte Torres & Weber, 2014). Overall, children did not explore many of the links that the results page provided (Bilal, 2000; Duarte Torres, Weber, & Hiemstra, 2014). Young people prefer to browse for information because it limits the number of retrieval options rather than searching more widely (Bilal, 2001a; Knight & Mercer, 2015; Large, Nasset, & Beheshti, 2008). When students retrieve information on the web, they tend to jump from webpage to webpage and spend little time entirely reading their results (Large, Nasset, & Beheshti, 2008).

Although children seek information in similar ways as adults, their affective, cognitive, and physical actions illustrate how they may need support when seeking information. Classroom support, the role of school librarians, and information literacy models will be explored to see how they play a role in meeting these needs.

### **Classroom Support for Information Literacy**

Classroom support can provide the help that young people need as they seek information. Pre-service classroom teachers face barriers in providing the assistance students need due to the inadequacy of resources, time, and training.

### **Teacher Preparation Programs**

Some teacher preparation programs do not systematically include information literacy pedagogy (Duke & Ward, 2009; Kovalik, Jensen, Scholman, & Tipton, 2010; Urbani, Roshandel, Michaels, & Truesdell, 2017). The effects of this are evident with new teachers who are unfamiliar with the concepts of information literacy or some who may not see teaching information literacy skills as a priority in their classrooms

(Stockham & Collins, 2012). Although some programs do incorporate information literacy skills, these same programs may not be assessing these skills (Emmons, Keefe, Moore, Sanchez, Mals, & Neely, 2009). If programs do not assess their pre-service teachers on information literacy skills, they cannot measure the growth of learning these skills over time to ensure they will be prepared to teach them in the classroom (Kovalik et al., 2010). Constraints for information literacy skills taught or assessed in these programs include a lack of time and faculty members' perceptions of their expertise of information literacy (Kovalik et al., 2010).

### **Information Literacy Skills of Teachers**

Teacher preparation programs may need to incorporate more information literacy skills, as some teachers may not know what information literacy includes or they may believe that information literacy is the same as information communication technology (ICT) skills (Probert, 2009). Teachers may not see that they have a role in teaching information literacy skills because they view it as the responsibility of the school librarian or computer/technology teacher (Asselin, 2017). Some teachers may have adequate information literacy skills but face other barriers to teaching their students these skills (Asselin, 2017; Probert, 2009). These barriers include a lack of time and an overwhelming curriculum, a need for professional development in the area of information literacy or continued support after the professional development, and access to more resources (Asselin, 2017; Probert, 2009).

### **Embedding Information Literacy**

Solutions to help teachers equip students with information literacy skills are to embed these skills into the curriculum and to use the school librarian to help teach these

skills to students. Lin Ching, Yaw-Huei, and Wen-I (2014) found that by integrating information literacy into the science curriculum, seventh-grade science students' comprehension and problem-solving skills increased compared to students who received content through a traditional lecture mode of instruction. The integration of information literacy into the unit did not increase students' factual information acquisition, which is a lower level of thinking skills (Lin Ching, Yaw-Huei, & Wen-I, 2014). Information literacy skills are best learned in real contexts and embedding information literacy skills instruction into the curriculum can make these skills more relevant to students' learning (Eisenberg, 2008).

### **The Emerging Role of School Librarians**

School librarians can affect the information literacy skills of students in various ways. This section will explore the role school librarians have in the support and implementation of inquiry, in the facilitation of lower and higher-order of thinking skills, how collaborative efforts can affect student achievement, and how school librarians can help to develop the information literacy skills of students.

#### **Support and Implement Inquiry**

Inquiry-based learning is a learner-centered, constructivist approach to learning, where the learner learns by doing or learns through the inquiry process (Buchanan et al., 2016). There are benefits of inquiry-based learning that include knowledge and skills development, increased intrinsic motivation, development of expertise, self-efficacy, task commitment, positive attitudes about learning, perceived mastery, and greater creativity (Buchanan et al., 2016). Although inquiry-based learning may seem like a more recent trend in education, it has been present in the school library discourse for decades

(Levitov, 2016). School library theory has seen an evolution of inquiry to include the student being an active participant of his/her learning instead of being a receiver of knowledge and information (Callison, 2014). The shift has also included “movement toward enhancing the role of [the] school librarian and other teachers to be collaborating information specialists who manage and mentor the learning processes associated with inquiry” (Callison, 2014, p. 14). According to Levitov, Kuhlthau established that a collaborative culture is necessary for the successful implementation of the inquiry approach to learning.

### **Levels of Research Skills**

The concept of information literacy has evolved to become more of a process (Herring, 2009). Traditional research includes lower levels of thinking in Bloom’s Taxonomy (1956), where the teacher provides questions that require students to collect information in order to answer (Levitov, 2016). Gordon (2002) identifies students in traditional research as reporters, as they are merely asked to read and summarize the information they find in these “pseudo-research projects” (p. 19). When students act as reporters of facts, they may develop the wrong idea of what research is when they reach higher education (Gordon, 2002). Authentic research involves higher levels of thinking to ask questions, analyze information, and to contribute to a body of knowledge (Gordon, 2002). School librarians are in a position to work with teachers to create opportunities where students can use inquiry to research and to use higher-order thinking skills. School librarians can push their teachers to go past reporting information to having their students use the cognitive processes of a researcher (Gordon, 2002).



## **Benefits of Collaborating with the School Librarian**

School librarians can implement inquiry in their schools and do play an essential role in student achievement (Lance, Schwarz, & Rodney, 2014). Academic achievement levels are higher in schools that have better staffing, funding, and relevant and sufficient collections in their library programs (Francis, Lance, & Lietzau, 2010; Lamos, 2013; Lance, 2010; Lance & Hofschire, 2012). Lance, Schwarz, and Rodney conducted a study in South Carolina to investigate the impact school librarians had on student achievement. Results were consistent with the previous studies that indicated that many school library characteristics, such as library staffing, librarian teaching activities, amount of money spent per child, circulation of materials, size of the collection, and group library visits, correlated with student achievement. The study also found that South Carolina administrators valued librarians and teachers designing and teaching units together (Gavigan & Lance, 2015).

## **Development of Information Literacy Skills**

School librarians have an essential role in students' development of information literacy skills. School librarians may be the only ones in their building to advocate for or lead information literacy skills instruction or have the skills and expertise to do so (Farmer, 2016). Asselin (2017) identifies the characteristics of a teaching and learning environment that influence effective implementation of information literacy teaching as the collaboration between teachers, use of resource-based and project-based learning, a constructivist approach to teaching, and collaborative teaching and planning with the school librarian. It is difficult to quantify the value that school librarians bring to developing information literacy skills of students because capturing this information is

difficult through standardized testing due to the many influences that play a part in student achievement (Thomas, Crow, & Franklin, 2011). However, with research strands embedded throughout the Common Core State Standards, the opportunities for school librarians to help equip students and teachers with the skills they need are plentiful. School librarians have a unique role within the school of being able to work with each student to help develop the skills they will need to be successful in the 21<sup>st</sup> century.

### **Summary**

It is vital for students to learn information literacy skills in K-12 and higher education settings, as well as to have information problem-solving skills in the workplace. Evidence from local, national, and international assessments and studies show that students often lack the information literacy skills needed to be successful in academic and professional arenas.

Young people experience a range of emotions when given an information problem-solving task or when seeking information. Students often experience frustration, confusion, and anxiety, as evident with Kuhlthau's (1985, 1988, 1989, 1991) Information Search Process research. In addition to their affective behaviors, children tend to have specific cognitive and physical actions that can be challenging when seeking information. Cognitively, students are more engaged when they feel that topics are relevant to them, and their curiosity can be a source of both motivation and frustration (Bowler, 2010; Buchanan, Harlan, Bruce, & Edwards, 2016). Children may need more time when given a complex task, and they may have difficulty when evaluating information and sources (Knight & Mercer, 2015; Large, Nasset, & Beheshti, 2008; Metzger et al., 2015; Walhout et al., 2017). The physical actions that young people show when seeking information

illustrate how their searching, reading, and working with information may be limited, as they prefer to select links at the top of the page, they do not explore many links on the result page of a search engine, and some prefer to browse for information in order to limit results (Bilal, 2000; Bilal, 2001a; Bilal, 2001b; Duarte Torres, Weber, & Hiemstra, 2014; Knight & Mercer, 2015; Large, Nasset, & Beheshti, 2008).

The classroom support for students learning the necessary information literacy skills may have barriers, such as teachers not having the time, resources, or knowledge to equip students with these skills (Asselin, 2017). Research has shown that many pre-service teacher programs do not systematically teach information literacy skills or do not assess for growth (Asselin, 2017; Duke & Ward, 2009; Emmons et al., 2009; Kovalik et al., 2010; Urbani et al. 2017). To help students work with information more efficiently, librarians have used information literacy models for many years to guide students through the information seeking process. Eisenberg and Berkowitz's (1990) Big6 model, Nasset's (2013) BAT model, Herring's (1996, 1999) PLUS model, and Neuman's I-LEARN models are just a few of the models that this literature review explores. Although these studies reveal the benefits of using an information literacy model with students, they also show that there is no one particular model that works better than another.

School librarians can be a support to classroom teachers and can help support teachers and implement inquiry with students. School librarians have the expertise to teach information literacy skills, and schools with fully staffed libraries show higher student achievement (Francis, Lance, & Lietzau, 2010; Lamos, 2013; Lance, 2010; Lance & Hofschire, 2012). Schools equipped with fully staffed libraries can take advantage of

their in-house resources to better provide students with the information literacy skills they need for their academic lives and post-graduate careers.

## CHAPTER 3

### METHODOLOGY

This action research study examined the effects of implementing the Simple Four model (Alewine, 2006) with sixth-grade students to determine how the model influenced their information seeking behavior, their confidence, and their anxiety during the research process. Evidence from the researcher's observations and discussions with classroom teachers indicated that students at the participating middle school often struggled during the research process, especially sixth-grade students. Data from a district-wide assessment showed that students at Midlands Middle School had "Basic" research and information fluency skills at the end of their middle school career, compared to "Proficient" or "Advanced" skills as described by the assessment (Learning.com, 2016). Specifically, the assessment showed students lacked skills and knowledge in the areas of information location and information problem solving and decision-making, and how to use information (Learning.com, 2016).

The study sought to answer the questions, "How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?" and "How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?" The researcher was interested in how the structure of the model influenced the steps students took when given a research task, how the model affected the emotional state students when presented with an information seeking

task, and how helpful students believed the Simple Four model (Alewine, 2006) was for them during their research tasks.

### **Research Design**

Educational research encompasses many research models and refers to the application of the scientific method to topics, phenomena, or questions in the educational field (Mertler, 2014). Educational research is “fundamentally a personal and social process” (Allender, 1986, p. 174), as the presence of subjectivity and social and political influences are unavoidable. Two paradigms of educational research include traditional research methods and action research methods. Both methods look to answer questions or understand issues. Although some criticize action research for lack of rigor, action research goes beyond the explanation of traditional research methods to the application at a local level (Mertler, 2014). Action research tries to solve problems with a specific educational situation to create more effective learning environments with a heavy focus on reflection and improving the teaching process in a teacher’s own classroom or educational setting (Allender, 1986; Mertler, 2014). Action research connects best practices in theory to practice because teachers use theory to understand their practices better and then use the data they collect to inform educational research (Melrose, 2001; Mertler, 2014). Action research is central to the improvement of teacher practice and school improvement, and it can be collaborative in its approach (Melrose, 2001; Mertler, 2014).

Historically, critics of action research have assumed that since educators are conducting the research and not academics, the research lacks quality or rigor (Mertler, 2014). Melrose (2001) suggests that educators consider internal validity, external

validity, and construct validity to provide rigor within the action research project.

However, rigor can also refer to the entire research process, as results should not be biased or reflect the specific perspective of the researcher (Mertler, 2014). The cyclical nature and focus on real practices give action research its rigor, as “*realistic* and *regular* are synonyms for rigorous” (Melrose, 2001, p. 166). The cycles of action research (reconnaissance, intervention, and an evaluation of the intervention), along with critical reflection during the process helps maintain the rigor of action research (Melrose, 2001).

### **Rationale for Selected Methodology**

The research design for this study used a sequential explanatory design, as the researcher first collected quantitative data and then collected qualitative data that helped to explain or support the quantitative results. This design is appropriate for the study because both quantitative and qualitative data may provide a better understanding of the research problem than using only one type of data (Mertler, 2014). The researcher used the qualitative methods of interviews and participant observations to collect data.

Participants answered pre- and post- questionnaires, which comprised the quantitative data. Mertler (2014) describes quantitative data collection as more efficient because the researcher can collect data from many individuals simultaneously. Although the use of questionnaires capitalized on efficiency and gathering a large number of students’ feelings and perceptions, it lacked the depth of insights that a qualitative approach can provide. Interviews and participant observations were better able to capture this depth and went beyond items on the questionnaire, which only provided rating scale responses. There can be benefits in using both methods, such as gaining in-depth data, efficiency, and obtaining responses from a larger group of individuals (Mertler, 2014). This action

research study employed both methods to increase the validity of the study. The use of these three data collection methods provided the triangulation of data, which increases the qualitative rigor of the study (Melrose, 2001).

### **Intervention**

Because some students at Midlands Middle School found the research process difficult, the intervention used for this study was the information literacy model the Simple Four (Alewine, 2006). The Simple Four model consists of a four-stage cyclical process that outlines the stages of research and questions students need to think about during the different phases of the research process. The model provides the structure of the research process in the four stages of plan, act, organize, and reflect.

The researcher taught the model to the students during two research tasks over a 6-week period. The researcher introduced the model to students during the first task and taught them how to use the model using a Google Form, which articulated each stage of the process and required students to answer questions that corresponded to each stage in the model. Students had to complete and submit the form each day that they worked on the first research task to communicate where they were in the process. If a student completed the planning stage on day one of their research, the researcher explained to students that they did not have to complete that portion of the form again, unless they needed clarification about the assignment. However, the researcher and classroom teacher did encourage students to complete the acting, organizing, and reflecting portions of the form each day, as students might need to identify more sources to use and they needed to assess their current work to the assignment rubric. A reflection with the classroom teacher after the first research task led the researcher to adapt the one form into



four separate forms that corresponded with each stage of the information literacy model for the second research task. During the second research task, the researcher reviewed the Simple Four model (Alewine, 2006) for students during each day of their second research task. The classroom teacher and researcher guided and consulted with students on which forms to complete depending on where individual students were in the process. Students answered the questions on the forms and were required to submit the Google forms in order to complete the research task.

### **Research Context and Setting of Study**

The participating middle school is within a school district outside the capital city of Columbia, South Carolina. The school opened in August 2012 and is a public school that serves 1,179 students in Grades 6-8 (SCDE, 2018a). Pseudonyms are used throughout the study to protect the identity of the participants and the setting.

Midlands Middle School is an Expeditionary Learning (EL) school, where teachers use “experiential, community-based authentic learning expeditions (deep, interdisciplinary case studies aligned to state standards)” in their teaching and student learning (Klein & Riordan, 2011). Midlands Middle School focuses on creating an environment that fosters student leadership and learning, including the use of student-engaged assessments, student-led monthly meetings called Town Halls, small group team-building, leadership, and academic skills meetings (CREW), the assessment of non-academic characteristics (Habits of Scholarship), and research case studies. The South Carolina Department of Education (2018a) classifies around 25% of the students as in poverty, which means that they either receive Medicaid, Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), or they are a

foster child or are homeless. The South Carolina Department of Education (2018a) classifies 6.8% of students with disabilities, and the gifted and talented program serves 35.7% of the student population. The faculty and staff of Midlands Middle School include various classroom administrators, teachers, interventionists and specialists, as well as staff members. Table 3.1 illustrates the school's personnel.

Table 3.1

*Personnel of Participating School*

Personnel Type	Total
Administrators	4
Classroom Teachers	74
Guidance Counselors	4
Psychologists	2
Specialists	5
Paraprofessionals	11
Food Services Staff	5
Custodial Staff	9

Sixth- and seventh-grade teachers and students “loop,” meaning these teachers teach the same students for two years in a row. All students are required to take science, math, social studies, English Language Arts, and a world language, such as Chinese, French, Latin, or Spanish. Students have two related arts classes a semester, which can include iCivics (a civics and leadership class), physical education, outdoor education, dance, drama, art, orchestra, band, chorus, STEM (science, technology, engineering, math), or digital design. Special Education services include one self-contained teacher, one Cross Categorical (2) Moderate Disabilities teacher, one Response to Intervention

English Language Arts teacher, one Response to Intervention math teacher, and three resource teachers.

The researcher has been the school librarian at Midlands Middle School for the past six years. The library program operated on a flexible schedule and followed the learning commons model, designed from *The New Learning Commons: Where Learners Win!* (Loertscher, Koechlin, & Zwaan, 2011). The district had undergone a process over the past seven years to convert its media centers to the learning commons model. This model included creating flexible, open, and collaborative spaces, moving specialists and coaches in the same area, acquiring the latest technologies and resources, including student contributions for students to feel ownership of the space, and employing a client-based model of the school library program.

Midlands Middle School is within a school district that serves over 25,000 students in 30 schools, with 17 elementary schools, seven middle schools, five high schools, and one alternative learning program (SCDE, 2018b). Just under half of the students (43.5%) in the district qualify as within the poverty index and the state classifies 12.2% of students as having disabilities (SCDE, 2018b). Just over 75% percent of students are white, 11.3% are African American, 7.8% are Hispanic, 4.1% are two or more races, 2.4% are Asian, 0.2% are American Indian or Alaska Native, and 0.1% are Native Hawaiian or Other Pacific Islander (SCDE, 2018b).

### **Role of the Researcher**

Action research can be collaborative in its approach (Melrose, 2001; Mertler, 2014). The researcher collaborated with the sixth-grade social studies teacher to help conduct the study. The researcher worked with the teacher to disseminate consent letters,

ensure that students completed the pre- and post-questionnaires, and to teach students how to use the Simple Four model (Alewine, 2006) during their research tasks.

Collaboration was critical in this study because the researcher did not have a class of students. The researcher was a full participant in the study, as she taught the model, interacted with students, and made observations and recorded data on those observations.

### **Participants**

This action research study focused on students new to middle school, namely sixth-grade students. The sample included one class of sixth-grade students, and the researcher used convenience sampling to collect data on students new to middle school. The researcher used purposive sampling to select students for the interview data collection method, as the researcher wanted to ensure that the smaller sample included gender, ethnicity, lower confidence and self-efficacy scores, as well as higher anxiety scores. The sample size was 26 students, which was the average amount of students in a sixth-grade class. One class of sixth-grade students effectively addressed the research questions, as this sample demographically represented the entire sixth grade. Of the 26 students, there were 11 males and 15 females. Twenty-two students were white, three were black, and one was Hispanic. Two students had IEPs, and one student had a 504 Plan. There were 354 students in the sixth-grade, with 171 males and 183 females (J. Dean, personal communication, March 12, 2018). There were 40 African Americans, 30 Hispanic, 29 Asian, one American Indian or Alaskan Native, nine students categorized as two or more races, and 245 white students within the class (J. Dean, personal communication, March 12, 2018). When determining which class should serve as a sample, the researcher spoke with the social studies teacher and asked for the class that

had a diverse range of needs. Table 3.2 is a list of all of the students in the class with their demographic information and indicates the students that the researcher interviewed for the study.

Table 3.2

*Demographic Characteristics and Identification of Participants Interviewed*

Participant	Gender	Race	Interviewed
Student A	M	White	X
Student B	F	White	
Student C	F	White	
Student D	F	White	
Student E	F	White	
Student F	F	Black	X
Student G	M	White	X
Student H	F	White	X
Student I	F	White	X
Student J	M	White	
Student K	F	White	X
Student L	F	White	X
Student M	F	White	X
Student N	F	White	
Student O	M	White	X
Student P	F	White	X
Student Q	M	White	
Student R	M	White	X
Student S	M	White	
Student T	F	Hispanic	X
Student U	M	White	X
Student V	M	White	
Student W	F	Black	X
Student X	F	White	X
Student Y	M	Black	X
Student Z	M	White	X

### **Data Collection Instruments**

In order to investigate how the implementation of an information literacy model affected students' information seeking behavior, the researcher used pre- and post-

questionnaires to capture student attitudes and perceptions of the research process. The researcher used semi-structured interviews to gather more in-depth information about how the use of the Simple Four model (Alewine, 2006) affected how students viewed and gathered information. While students were using the model with their research tasks, the researcher made participant-observations on their physical actions and recorded the data in field notes.

### **Pre-Questionnaires**

The researcher used a pre-questionnaire (Appendix C) at the beginning of the research study because it allowed students a space to share their thoughts and feelings about an instructional intervention (Mertler, 2014). The researcher created the pre-questionnaire using the research process outlined by the Simple Four (Alewine, 2006) and the stages in Kuhlthau's ISP model (1991) to develop the self-efficacy statements. The researcher created the confidence and anxiety statements by consulting the feelings characterized by various stages in Kuhlthau's ISP model (1991), which includes uncertainty, confusion, frustration, doubt, and disappointment. The pre-questionnaire was composed of three sections: students' self-efficacy levels, their anxiety levels, and their confidence levels during the research process. A rating scale was used within the questionnaire to capture students' responses that indicated the extent of their agreement and degree of understanding of feelings and attitudes during the research process (Mertler, 2014). Six statements addressed students' beliefs in their abilities to execute behaviors during the research process. Three statements addressed students' anxiety levels when given a research task. Lastly, three statements addressed students' confidence levels with the research process. Tables 3.3, 3.4, and 3.5 outline what items

addressed the self-efficacy, confidence, and anxiety levels of students regarding the research process. Tables 3.6 and 3.7 provide their rating scales.

Table 3.3

*Self-Efficacy Statements on Questionnaires*

Section	Statements Associated with Section
Self-Efficacy	When given a research task, I know where to begin.
Self-Efficacy	When given a research task, I know what to do next.
Self-Efficacy	When given a research task, I know where to go to get information.
Self-Efficacy	When given a research task, I think about whether or not a source is trustworthy.
Self-Efficacy	When given a research task, I think about how to organize all the new information I have gathered.
Self-Efficacy	After I have completed a research task, I think about or reflect on what I would do differently next time.

Table 3.4

*Anxiety Statements on Questionnaires*

Section	Statements Associated with Section
Anxiety	I feel anxious or nervous when my teachers ask me to research a topic.
Anxiety	I feel anxious or nervous when my teachers give me a research assignment.
Anxiety	I think that researching is difficult.

Table 3.5

*Confidence Questions on Questionnaires*

Section	Questions Associated with Section
Confidence	How do you feel about the research process and all the steps you take when researching?
Confidence	How confident do you feel when your teachers ask you to research a topic you don't know much about?
Confidence	How confident do you feel when your teachers give you a research assignment as a summative?

Table 3.6

*Rating Scale for Self-Efficacy and Anxiety Statements*

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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Table 3.7

*Rating Scale for Confidence Questions*

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
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The development of the pre-questionnaire went through a revision process that included feedback from other school librarians. Six middle school librarians, which were the researcher's Professional Learning Community (PLC) in the school district, reviewed the questionnaire and gave feedback to the researcher. Feedback from the PLC included editing the wording on several items.

**Semi-Structured Interviews**

The second method of data collection was semi-structured interviews (Appendix E). The researcher developed the interview questions with the collaboration of her PLC.



Feedback from the PLC included reducing the number of items asked and wording for specific questions. The interview consisted of seven questions, and they addressed the steps of the Simple Four model (Alewine, 2006) and students' perceptions of the information literacy model concerning their work. The interview guide was developed based on studies that found information literacy models helpful to students (Greenwell, 2016; Herring, 2009; Nessel, 2013; Neuman et al., 2015; Probert, 2009), as the questions sought to get more in-depth feedback on the Simple Four model (Alewine, 2006). The researcher used semi-structured interviews to ensure flexibility existed to allow for asking any clarifying questions to students if needed (Mertler, 2014).

### **Participant Observations**

The third method of data collection was participant-observations. The researcher observed the behavior of participants as they used the Simple Four model (Alewine, 2006) during the research tasks and recorded field notes (Appendix F). The observation protocol was developed based on Mertler's (2014) field notes used for a previous study. The researcher observed students when they were using class time to work and complete the two separate research tasks. Observations took place during students' third-period class from 10:37 a.m.-11:31 a.m. on Mondays, Wednesdays, and Fridays and 11:16-11:41 on Tuesdays and Thursdays over the 6-week period. The researcher observed student behavior for 11 days throughout the study.

### **Post-Questionnaires**

The researcher gave a post-questionnaire (Appendix D) to students after they completed the two research tasks. This questionnaire was identical to the pre-questionnaire; however, there were six additional statements at end of the survey that

addressed the Simple Four information literacy model (Alewine, 2006). These statements included the degree to which students agreed or disagreed with whether the Simple Four model (Alewine, 2006) made researching easier, whether it helped them know where to begin and what to do next in the research process, and whether the Simple Four helped lessen their feelings of anxiety with the research process. Table 3.8 outlines the statements that addressed the Simple Four model (Alewine, 2006). The researcher developed the questionnaire with assistance from her PLC.

Table 3.8

*The Simple Four Feedback Statements on Post-Questionnaire*

Section	Question Associated with Section
Simple Four	The Simple Four made research easier.
Simple Four	When given a research task, the Simple Four helped me to know where to begin.
Simple Four	When given a research task, the Simple Four helped me to know what to do next in the research process.
Simple Four	When given a research task, the Simple Four helped me to think about using sources that are trustworthy.
Simple Four	The Simple Four helped me to not feel anxious or nervous when my teacher asked me to research a topic

### **Research Procedure**

Before the research study, the researcher met with the social studies teacher to discuss which one of her classes would work well for the research study. The researcher and teacher also discussed the study in-depth and what it might look like for the teacher and the students, such as the level of collaboration and areas that the researcher needed the teacher's assistance. The teacher disseminated the consent letters before the research study began and students had 2 weeks to return the letter.

In order to get baseline data, the researcher asked the students to complete a pre-questionnaire at the beginning of the 6-week data collection period. The questionnaire was created using Google Forms and was distributed with the Learning Management System Schoology, as all students have a district-issued iPad. Paper copies of the survey were on hand in case a student did not have access to an iPad. The researcher worked with the social studies teacher to coordinate a time when students could complete the pre-questionnaires at the beginning of the class period. During the first week, the teacher introduced the research project topic, the project details, and informed students how she would be assessing their learning. It was also during this week that the researcher introduced the research study and taught the Simple Four model (Alewine, 2006).

After the teacher introduced the research project to students, the researcher taught the first stage of the model, or plan. The researcher gave out paper copies of a graphic organizer that guided students through the Simple Four model (Alewine, 2006) or research process (Appendix G). The researcher taught students how to create a research plan by answering questions about their assignment and brainstorming possible sources to use. During their work time, the researcher observed student behaviors and recorded field notes. At the beginning of the first week, the researcher conferenced with the classroom teacher to get feedback on the process. The teacher suggested making the form digital through Google Forms where students could submit their work daily. The researcher converted the paper graphic organizer into a Google Form that students used throughout the first research project (Appendix H).

In subsequent days during the first week, the researcher reviewed the Simple Four model (Alewine, 2006) and continued to teach students the subsequent stages of the

model. Table 3.6 outlines the stages of the Simple Four model (Alewine, 2006) and the questions students were required to answer.

Table 3.9

*Stages of the Simple Four and Questions for Students*

Research Stage	Questions Students Answered
Plan	What is your teacher asking you to do? What is your assignment? What do you already know about your topic? What sources (books, websites, notes, etc.) might help you with your research?
Act	Where will you record your notes? Record your sources and be specific Is this source reliable? If your teacher is requiring you to provide a Works Cited/References list, have you done this?
Organize	What is your final product? Have you completed a rough draft of your final product?
Reflect	Have you compared your product to the rubric? Provide evidence that you have met Exemplary on the rubric. Provide evidence of what you need to work on to achieve Exemplary on the rubric. What went well for you during this research project? For your next research task, what will you do differently next time?

**Week One**

During week one, students switched from the paper graphic organizer to the digital Google Form to complete the act, organize, and reflect stages of the model. On the first day of students using the digital format of the model, the researcher realized that

some questions needed editing in order for students to submit the form. Initially, the researcher made specific questions “required,” where Google Forms would not allow them to move to the next question until they had completed the current question. With the nature of the research process and the Simple Four model (Alewine, 2006), some questions could not be answered at times because students were not at that stage of the research process. The researcher edited the form while during the class to allow students to submit the form with without requiring all portions of the form to be completed. When the teacher gave students the opportunity to work on their research task during week one and two, they were required to complete the Google Form as part of their exit ticket out of the class. The teacher and researcher decided that having students complete the form every day they researched or worked on their task would be best, as it would help students to reflect on what they had worked on and what steps they would need to do next. Participants’ daily submissions helped to capture the iterative process of research. When students were working on their research projects, the researcher recorded participant observations in field notes.

## **Week Two**

Students continued to work on their research task during the second week of the study. The researcher reviewed the Simple Four model (Alewine, 2006) and how to access the Google Forms every day. Specifically, the researcher focused on the acting, organizing, and reflecting stages and explained to students what they would be experiencing during these stages. The researcher also instructed students to include as much information in their completion of the forms, especially in additional sources used. The researcher observed in the students’ answering of the form that some students were

not answering the question of why their work was exemplary or not. Because Google Forms captures names, the researcher was able to follow up with these students and address this question with these students.

During the second week, the researcher also calculated the pre-survey results and made three lists of students to prioritize for interviews. The first list included those with the lowest self-efficacy scores in the research process (Table 3.10). The second list included students with the lowest confidence levels during the research process (Table 3.11). The third list included students that scored the highest with anxiety during the research process (Table 3.12). From these three lists, the researcher created a spreadsheet of students to be interviewed (Table 3.13).

Table 3.10

*Students with the Lowest Self-Efficacy Scores out of 30 Points*

Student	Self-Efficacy Score
Student K	15
Student L	15
Student O	15
Student A	16
Student X	17
Student F	17
Student I	18
Student H	18
Student U	19
Student T	19
Student P	21
Student W	21

Table 3.11

*Students with the Lowest Confidence Scores out of 15 Points*

Student	Confidence Score
Student Y	5
Student R	6
Student W	7
Student H	7
Student A	7
Student T	8
Student K	8
Student X	9
Student L	9
Student Z	9
Student F	9
Student U	9
Student P	9
Student M	10

Table 3.12

*Students with the Highest Anxiety Scores out of 15 Points*

Student	Anxiety Score
Student Y	14
Student P	14
Student O	13
Student W	12
Student G	12
Student U	11
Student M	11
Student F	10
Student K	9

Student L	9
Student I	9
Student R	9
Student T	9

Table 3.13

*Students Interviewed*

Student	Self-Efficacy Score (Out of 30 Points)	Confidence Score (Out of 15 Points)	Anxiety Score (Out of 15 Points)
Student A	16	7	7
Student F	17	9	10
Student G	23	12	12
Student H	18	7	6
Student I	18	9	9
Student K	15	8	9
Student L	15	9	9
Student M	25	10	11
Student O	15	11	13
Student P	21	9	14
Student R	21	6	9
Student U	19	9	11
Student T	19	8	9
Student W	21	7	12
Student X	17	9	8
Student Y	21	5	14
Student Z	28	9	5

**Week Three**

During the third week of the study, the researcher interviewed students when it would not interfere with classroom instruction. The researcher interviewed students in a



private area, and she recorded their voices with the computer application iMovie.

Interviews lasted from four to ten minutes, depending on student responses. Students were learning new social studies content during this time; therefore, no research tasks were taking place during this week. Because students were learning new content, there were not many opportunities to interview students during class time. The researcher had to wait for specific periods of time within the class period so that students did not miss any learning.

#### **Week Four**

The researcher conducted the last of the student interviews during week four of the study. As in week three, students were taken to a private area for the interviews to take place and were recorded using iMovie. Students were reviewing material this week in preparation for an assessment in their class; therefore, there were no research tasks during this time. The researcher conducted most of the interviews this week, as students were working individually to prepare for the assessment.

#### **Week Five**

The next research task began in the fifth week of the study and continued for a week. From observing the workflow of students from the first research task in prior weeks and feedback from the classroom teacher, the researcher made four separate Google Forms based on each stage of the Simple Four model (Alewine, 2006). The classroom teacher and researcher discussed the plans for the next research project. They decided that students would complete each stage of the research process and complete the corresponding Google Form on specific days. The researcher assisted students in accessing the forms and answered any questions that students had regarding the forms.

## Week Six

During the sixth week, the researcher interviewed students again, and all students completed the post-questionnaire. The post-questionnaire was created in Google Forms and disseminated through the Learning Management System Schoology. For students who were absent on the day that the students completed the post-questionnaire during class, the researcher emailed them to ask them to complete it or gave them a paper copy to complete. The research study took place over a 6-week period. Table 3.14 outlines when and what was completed each week of the study.

Table 3.14

### *Research Procedures*

Timeline	Procedures
Before the Study	Researcher and the classroom teacher planned and discussed student needs. Consent letters sent out to parents and received.
Week One	Researcher gave students the pre-questionnaire, and the researcher explained research study to participants. The teacher explained the research project and the researcher taught the Simple Four and how to use the Graphic Organizer and Google Form. Students began working on their research project. Each day that students worked on their project, they filled out the Simple Four Google Form.
Week Two	Students continued to work on their research project, and each day they completed the Simple Four Google Form. Researcher calculated scores from the pre-questionnaire to identify students with the lowest confidence and self-efficacy levels and highest anxiety levels during the research process. Student interviews began.
Week Three	The researcher interviewed students.
Week Four	The researcher interviewed students.

Week Five	The teacher introduced students to the second research task. The classroom teacher and researcher taught students how to complete each Google Form for each stage of the Simple Four.
Week Six	The researcher interviewed students. The researcher gave students the post-questionnaire.
After the Study	Researcher shared results with participants.

All identifying information on student participants remained confidential. The researcher changed the identifying information when she wrote up the results and shared the results with others. The researcher collected the data using Google Forms, Google Docs, and iMovie, which were private only to the researcher. The researcher stored the data in Google Forms spreadsheets, Google Docs, and Google Drive, and was password-protected using the school district's security measures with a district-issued MacBook Air and Gmail account. The researcher used the professional service Rev.com to transcribe the interviews and data was stored and organized using NVivo Software which was password protected.

## **Data Analysis**

### **Data Analysis Overview**

This study used a mixed-methods methodology, where the researcher collected quantitative and qualitative data through the use of questionnaires, interviews, and field notes. The quantitative data from the questionnaires were analyzed using descriptive statistics and inferential statistics. Descriptive statistics are mathematical procedures that summarize large amounts of numerical data (Mertler, 2014). The researcher used inferential statistics to determine the likelihood that a result will be found for an entire population based on a sample of the population (Mertler, 2014). The researcher analyzed

the qualitative data from the interviews and observational field notes through inductive analysis, where the researcher reduced the information collected and organized the data into themes to answer the research questions (Mertler, 2014).

**Pre- and post-questionnaires.** The descriptive statistics will describe what the quantitative data shows by summarizing the sample and the measures (Trochim, 2006). Descriptive statistical analysis generalizes to the particular group observed in the study and any similarities to individuals outside of the observed group cannot be assumed (Best & Kahn, 1998). Best and Kahn believe that simple action research studies involve descriptive analysis and provide valuable information regarding a specific group of individuals. The pre- and post-questionnaires included both Likert and Likert-type scales to capture students' feelings, attitudes or perceptions on the research process. The Likert scales included the following 5-points scale: (5) Strongly Agree, (4) Agree, (3), Neither Agree or Disagree, (2) Disagree, and (1) Strongly Disagree. The Likert-type scales included the following 5-point scale: (5) I feel very confident, (4) I feel confident, (3) I feel neither uncertain or confident, (2) I feel uncertain, and (1) I feel very uncertain. The researcher organized the data from the questionnaires in spreadsheets in Google Sheets.

In order to identify students to interview, the researcher organized the data from the pre-questionnaire results by self-efficacy, confidence, and anxiety level scores in a Google Sheets spreadsheet. The researcher found the median as the measure of central tendency and interviewed students at the lower half of the central tendency for all three categories, beginning with the lowest self-efficacy scores, the lowest confidence level scores, and the highest anxiety scores.

The researcher analyzed the data from the pre-questionnaire and post-questionnaires by finding the measures of central tendency from each self-efficacy, confidence, and anxiety item. She then found the measures of central tendency for each of these sections. A repeated-measures *t*-test was used on items 1-12 of the pre- and post-questionnaires to compare two measures with the students (Mertler, 2014). The mean scores from the pre- and post-questionnaires were calculated and then statistically compared in order to examine if the difference between the means was statistically significant (Mertler, 2014).

**Semi-Structured Interviews.** The researcher used inductive analysis to analyze the qualitative data from the interviews. The researcher transcribed the interviews so that data could be organized. The data from the interviews were organized and coded using NVivo software. The researcher identified words/phrases and patterns of behavior that repeated throughout the data by examining each question and each student's responses. After coding was complete, the researcher described the characteristics of the categories from the coding. Lastly, the researcher interpreted the organized and described information to answer the research questions.

**Field notes.** Inductive analysis was used to analyze the qualitative data from the field notes. The data from the field notes were organized and coded using NVivo software, and the researcher identified patterns of behavior of students when they were working on the two research tasks and using the Simple Four model (Alewine, 2006). The researcher completed descriptions of the categories of coding and then interpreted the information to answer the research questions.

## **Summary**

This chapter discussed the research design, methodology, procedures, and data analysis of the study. The study took place at a middle school where some students often struggle with the research process and focused on a class of sixth-grade students as participants. The researcher used a sequential explanatory research design as she collected the quantitative data first and then collected the qualitative data to help explain or elaborate on the quantitative results. Students received a pre-questionnaire at the beginning of the study and a post-questionnaire at the end of the study to gather their perceptions and attitudes on their self-efficacy of the research process and their confidence and anxiety levels during the research process. During the 6-week study, students had two research tasks during which they used the Simple Four model (Alewine, 2006) to guide them through the research process. The researcher was a full participant in the study, learning from and interacting with students. From the pre-questionnaire, the researcher identified students with the lowest self-efficacy and confidence scores, as well as the highest anxiety scores, during the research process. The researcher selected these students to interview. The researcher analyzed the qualitative data using inductive coding and analyzed the quantitative data using descriptive and inferential statistics. Chapter 4 will discuss the findings from the data analysis.

## CHAPTER 4

### PRESENTATION AND DATA ANALYSIS

This chapter explores the findings of the research questions: “How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?” and “How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?” This study used a sequential explanatory research design, as the researcher first collected the quantitative data and then the qualitative data to help explain or elaborate on the quantitative results. The researcher collected data through the use of pre- and post-questionnaires, semi-structured interviews, and participant observations. The researcher analyzed the quantitative data using descriptive statistics, such as finding the measures of central tendency. The researcher also used inferential statistics with a repeated-measures *t*-test on items 1-12 of the pre- and post-questionnaires. An inductive approach was used to analyze the qualitative data. This chapter begins with a description of the intervention used in the study, discusses the general findings and results of the study, and finally describes the analysis of data based on the research questions.

#### **Intervention**

Over the course of 6 weeks, the researcher taught sixth-grade students from one social studies class the Simple Four information literacy model (Alewine, 2006) and

asked students to use it during two separate research tasks. The four stages of plan, act, organize, and reflect comprise the Simple Four model (Alewine, 2006). Each stage includes questions for student participants to think about and answer during the research process. These stages are not necessarily linear, as research is an iterative process. For the first research task, student participants completed a Google Form each day they worked on the task. The Google Form (Appendix H) guided student participants through all four stages of the Simple Four model and required that student participants answer the questions associated with each stage. For the second research task, student participants completed one form during each day of the research process. With both research tasks, students were sent a copy of their answers for the forms via email so that they could review what they needed to do next in the process (See Appendix I for example).

## **General Findings and Data Analysis**

### **Questionnaire Data**

The quantitative data collected in the study was from pre- and post-questionnaires given to student participants at the beginning and end of the 6-week study. The pre- and post-questionnaires consisted of 12 items that collected data on student participants' attitudes and perceptions of their self-efficacy, confidence, and anxiety levels during the research process. Students were selected to be interviewed based on their pre-questionnaire scores for the self-efficacy, confidence, and anxiety portions of the survey. The researcher compiled a spreadsheet of students who had the lowest self-efficacy scores, lowest confidence scores, and highest anxiety scores to identify interview candidates. All 26 students completed the pre- and post-questionnaires. In addition, the



post-questionnaire included six items that addressed student participants' perceptions of the Simple Four information literacy model (Alewine, 2006).

The questionnaires consisted of statements and responses that student participants chose from a Likert scale or a Likert-type scale. The results from the pre- and post-questionnaires were analyzed using descriptive statistics using the web-based program StatCrunch. The researcher calculated the measures of central tendency for the class's responses for self-efficacy, confidence, and anxiety scores. However, Mertler (2014) suggests for Likert scales, the median is a more appropriate measure of central tendency, as the average score on a Likert scale is difficult to interpret. The median is a score in a set of data that separates the entire distribution into equal halves, as it is the score where 50% of all scores fall below and 50% are above it (Mertler, 2014). To determine if a difference in two means was statistically significant, the researcher obtained the *p* value, which indicates the probability of chance occurrences in the study (Mertler, 2014). The *p* value was compared with the alpha level, which is typically set as  $\alpha=0.05$  in educational research studies (Mertler, 2014). If the *p* value is less than the alpha level, the difference is statistically significant. If the *p* value is greater than the alpha level, the difference is not statistically significant (Mertler, 2014). The researcher used a repeated-measures *t*-test on items 1-12 of the questionnaires, which compares two measures taken on the same individuals (Mertler, 2014). The *t*-test helped the researcher analyze whether the differences between the mean scores of the pre- and post-questionnaires were statistically significant.

**Self-efficacy results.** The self-efficacy portion of the pre- and post-questionnaires (Appendix J) included six statements with five Likert scale responses of 1)

Strongly Disagree, 2) Disagree, 3) Neither Disagree or Agree, 4) Agree, and 5) Strongly Agree. The following two sections will detail the pre-questionnaire and post-questionnaire results, as well as present a statistical analysis of these results.

***Pre-questionnaire results.*** The researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for all items within the self-efficacy section of the pre-questionnaires (Table 4.1). She also calculated the measures of central tendency for the entire section of self-efficacy (Table 4.2). As the median is a more appropriate measure of central tendency for Likert scales, the researcher focused on the median scores and mean scores of the results from the questionnaires. On the pre-questionnaire, the median for all self-efficacy statements was a 4 on a 5-point scale. A score of 4 on the Likert scale indicates the selected response of “Agree” to statements regarding students’ knowing what actions to take, or behavior to execute, during the research process.

Table 4.1

*Measures of Central Tendency for Self-Efficacy Statements on Pre-Questionnaire*

Self-Efficacy Statements	<i>M</i>	<i>Mdn</i>	<i>SD</i>
When given a research task, I know where to begin.	3.73	4	0.83
When given a research task, I know what to do next.	3.61	4	0.98
When given a research task, I know where to go to get information.	3.46	4	1.02
When given a research task, I think about whether or not a source is trustworthy.	3.77	4	1.07
When given a research task, I think about how to organize all the new information I have gathered.	3.65	4	0.98
After I have completed a research task, I think about or reflect on what I would do differently next time.	3.62	4	0.90

Table 4.2

*Measures of Central Tendency for Self-Efficacy Section on Pre-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Self-Efficacy	3.64	4	0.11

**Post-questionnaire results.** For the post-questionnaire, the researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for each item in the self-efficacy section. She also calculated the measures of central tendency for the entire self-efficacy section and the results of her statistical analysis appear in Tables 4.3 and 4.4.

Table 4.3

*Measures of Central Tendency for Self-Efficacy Statements on Post-Questionnaire*

Self-Efficacy Statements	<i>M</i>	<i>Mdn</i>	<i>SD</i>
When given a research task, I know where to begin.	4	4	1.02
When given a research task, I know what to do next.	4.08	4	0.74
When given a research task, I know where to go to get information.	3.85	4	0.88
When given a research task, I think about whether or not a source is trustworthy.	3.62	4	1.17
When given a research task, I think about how to organize all the new information I have gathered.	4.31	4	0.78
After I have completed a research task, I think about or reflect on what I would do differently next time.	3.88	4	0.91

Table 4.4

*Measures of Central Tendency for Self-Efficacy Section on Post-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Self-Efficacy	3.95	4	0.23

The median for all self-efficacy statements on the post-questionnaire was 4. The researcher examined individual student participant median scores to find varying increases and decreases between pre- and post-questionnaires. For example, Student K increased her score 14 points from pre-to post-questionnaire, whereas Student J decreased in his score by seven points between pre- and post-questionnaires. Figure 4.1 presents the pre- and post-questionnaire self-efficacy scores by student participant. Appendix L provides the increases and decreases in scores by student participant.

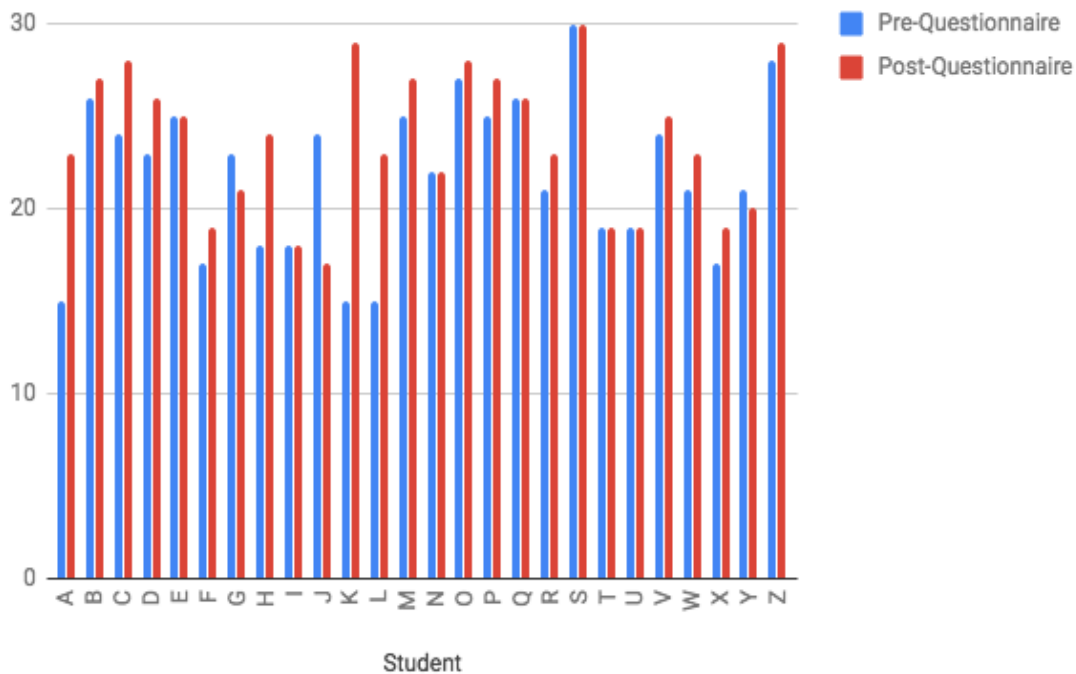


Figure 4.1 Student self-efficacy scores from pre- to post-questionnaire

Because the median stayed the same ( $Mdn=4$ ), the researcher looked closely at the mean scores from pre- and post-questionnaire. The individual means and difference of means between pre-questionnaire and post-questionnaire are shown below and in Table 4.5.

- “When given a research task, I know where to begin” showed an increase from the pre-questionnaire ( $M=3.73$ ,  $SD=0.83$ ) to the post-questionnaire ( $M=4$ ,  $SD=1.02$ ) with a difference in means of 0.27.
- “When given a research task, I know what to do next” showed an increase from the pre-questionnaire ( $M=3.61$ ,  $SD=0.98$ ) to the post-questionnaire ( $M=4.08$ ,  $SD=0.74$ ) with a difference in means of 0.47.
- “When given a research task, I know where to go to get information” showed an increase from the pre-questionnaire ( $M=3.46$ ,  $SD=1.02$ ) to the post-questionnaire ( $M=3.85$ ,  $SD=0.88$ ) with a difference in means of 0.39.
- “When given a research task, I think about whether or not a source is trustworthy” showed a decrease from the pre-questionnaire ( $M=3.77$ ,  $SD=1.07$ ) to the post-questionnaire ( $M=3.62$ ,  $SD=1.17$ ) with a difference in means of -0.15.
- “When given a research task, I think about how to organize all the new information I have gathered” showed an increase from the pre-questionnaire ( $M=3.65$ ,  $SD=0.98$ ) to the post-questionnaire ( $M=4.31$ ,  $SD=0.78$ ) with a difference in means of 0.66.

- “After I have completed a research task, I think about or reflect on what I would do differently next time” showed an increase from the pre-questionnaire ( $M=3.62$ ,  $SD=0.90$ ) to the post-questionnaire ( $M=3.88$ ,  $SD=0.91$ ) with a difference in means of 0.26.

Table 4.5

*Comparison of Self-Efficacy Statements*

	Pre-Questionnaire			Post-Questionnaire			
Self-Efficacy Statement	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>Difference in Means</i>
When given a research task, I know where to begin.	3.73	4	0.83	4	4	1.02	0.27
When given a research task, I know what to do next.	3.61	4	0.98	4.08	4	0.74	0.47
When given a research task, I know where to go to get information.	3.46	4	1.02	3.85	4	0.88	0.39
When given a research task, I think about whether or not a source is trustworthy.	3.77	4	1.07	3.62	4	1.17	-0.15
When given a research task, I think about how to organize all the new information I have gathered.	3.65	4	0.98	4.31	4	0.78	0.66
After I have completed a	3.62	4	0.90	3.88	4	0.91	0.26

research task, I think about or reflect on what I would do differently next time.

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After comparing results from each statement from pre- to post-questionnaire, the researcher then compared the mean ( $M$ ), median ( $Mdn$ ), and standard deviation ( $SD$ ) of the totals from the pre- to post questionnaires (Table 4.6). The median remained the same ( $M=4$ ), but the overall mean score increased from pre- to post-questionnaire ( $M=3.64$ ,  $M=3.95$ ).

Table 4.6

*Comparison of Self-Efficacy Sections*

	$M$	$Mdn$	$SD$
Scores from Pre-Questionnaire	3.64	4	0.11
Scores from Post-Questionnaires	3.95	4	0.23

The researcher used a repeated-measures  $t$ -test to examine if there were statistically significant differences between the means of the pre- and post-questionnaires. The results of the researcher's statistical analysis appear in Table 4.7. Based on a statistical analysis of results, where  $t(25)=2.48$ ,  $p=0.01$ , the difference between the students' self-efficacy skills before and after the intervention efforts was significantly different.

Table 4.7

*Statistical Analysis of Paired t-Test for Self-Efficacy*

Hypothesis Test Results					
Difference	Mean	Std. Err.	DF	T-Stat	P-value
Post-Questionnaire - Pre-Questionnaire	1.88	0.76	25	2.48	0.01

**Confidence results.** There were three questions (Appendix K) on the pre- and post-questionnaire that captured the confidence levels of student participants during the research process. Likert-type scale responses were available for student participants to choose including 1) I feel very uncertain, 2) I feel uncertain, 3) I feel neither uncertain nor confident, 4) I feel confident, and 5) I feel very confident. The following two sections detail the results of the pre- and post-questionnaires, as well as present a statistical analysis of these results.

**Pre-questionnaire results.** The researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for each confidence question on the pre-questionnaire (Table 4.8). She also calculated the measures of central tendency for the entire confidence section (Table 4.9). The researcher again focused on the median scores and mean scores of the results. On the pre-questionnaire, the median for all confidence questions was a 3 on a 5-point scale. A score of 3 on the Likert scale indicates the selected response of “I feel neither uncertain nor certain” to questions regarding how student participants felt about the research process and when they are given a research task.



Table 4.8

*Measures of Central Tendency for Confidence Questions on Pre-Questionnaire*

Confidence Questions	<i>M</i>	<i>Mdn</i>	<i>SD</i>
How do you feel about the research process and all the steps you take when researching?	3.34	3	0.85
How confident do you feel when your teachers ask you to research a topic you don't know much about?	2.88	3	0.91
How confident do you feel when your teachers give you a research assignment as a summative?	3.19	3	0.98

Table 4.9

*Measures of Central Tendency for Confidence Section on Pre-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Confidence	3.14	3	0.23

**Post-questionnaire results.** For the post-questionnaire, the researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for each item within the confidence section. She also calculated the measures of central tendency for the entire confidence section and the results of her statistical analysis appear in Tables 4.10 and 4.11.

Table 4.10

*Measures of Central Tendency for Confidence Questions on Post-Questionnaire*

Confidence Questions	<i>M</i>	<i>Mdn</i>	<i>SD</i>
How do you feel about the research process and all the steps you take when researching?	3.35	3	0.85
How confident do you feel when your teachers ask you to research a topic you don't know much about?	2.88	3	0.91
How confident do you feel when your teachers give you a research assignment as a summative?	3.19	3	0.98

Table 4.11

*Measures of Central Tendency for Confidence Section on Post-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Confidence	3.14	3	0.24

The median for all confidence questions on the post-questionnaire was 3. Student participant scores varied in their increases and decreases between scores from pre- to post-questionnaire. For example, Student H increased her score by five points, whereas Student G decreased his score by four points from pre- to post-questionnaire. Figure 4.2 presents the confidence level scores by student participant from the pre- and post-questionnaire. Appendix O details the increases and decreases in scores by student participant.

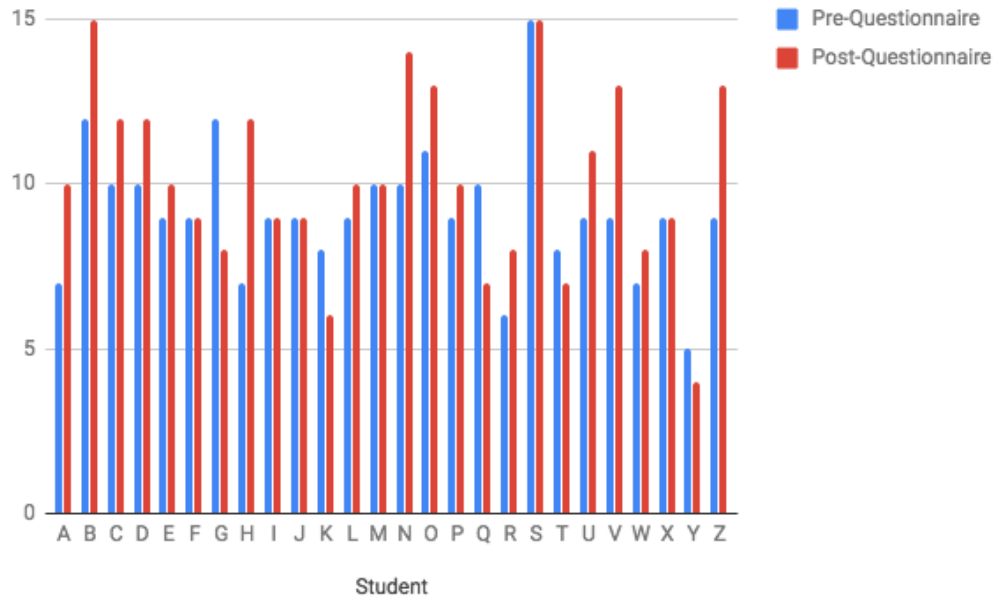


Figure 4.2 Confidence scores by student participant

The researcher analyzed the mean scores from the pre- and post-questionnaires. The individual means and difference of means between the pre-questionnaire and post-questionnaire are shown below and in Table 4.12.

- “How do you feel about the research process and all the steps you take when researching?” showed an increase from the pre-questionnaire ( $M=3.34$ ,  $SD=0.85$ ) to the post-questionnaire ( $M=3.35$ ,  $SD=0.85$ ) with a difference in means of 0.01.
- “How confident do you feel when your teachers ask you to research a topic you don’t know much about?” did not show a difference from the pre-questionnaire ( $M=2.88$ ,  $SD=0.91$ ) to post-questionnaire ( $M=2.88$ ,  $SD=0.91$ ).
- How confident do you feel when your teachers give you a research assignment as a summative? did not show a difference from the pre-questionnaire ( $M=3.19$ ,  $SD=0.98$ ) to post-questionnaire ( $M=3.19$ ,  $SD=0.98$ ).

Table 4.12

*Comparison of Confidence Questions*

	Pre-Questionnaire			Post-Questionnaire			
Confidence Question	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>Difference in Means</i>
How do you feel about the research process and all the steps you take when researching?	3.34	3	0.85	3.35	3	0.85	0.01
When given a research task, I know what to do next.	2.88	3	0.91	2.88	3	0.91	--
When given a research task, I know where to go to get information.	3.19	3	0.98	3.19	3	0.98	--

After examining the results by individual question, the researcher compared the mean (*M*), median (*Mdn*), and standard deviation (*SD*) from the pre- and post-questionnaires (Table 4.13). The median remained the same (*Mdn*=3) and the overall mean score remained the same from pre- to post-questionnaire (*M*=3.14, *M*=3.14).

Table 4.13

*Comparison of Confidence Sections*

	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Scores from Pre-Questionnaire	3.14	3	0.23
Scores from Post-Questionnaires	3.14	3	0.24

The researcher used a repeated-measures *t*-test to see if there were statistically significant differences in means between the pre- and post-questionnaire. The results of the statistical analysis are in Table 4.14. Based on a statistical analysis of results, where  $t(25)=1.96$ ,  $p=0.03$ , the difference between the student's confidence levels before and after the intervention efforts was significantly different.

Table 4.14

*Statistical Analysis of Paired t-Test for Confidence*

Hypothesis Test Results					
Difference	Mean	Std. Err.	DF	T-Stat	P-value
Post-Questionnaire - Pre-Questionnaire	0.85	0.43	25	1.96	0.03

**Anxiety results.** The pre- and post-questionnaire included three statements regarding anxiety with the research process (Appendix L). The statements included the Likert scale responses of 1) Strongly Disagree, 2) Disagree, 3) Neither Disagree or Agree, 4) Agree, and 5) Strongly Agree. The following two sections will detail the pre- and post-questionnaire results, as well as present a statistical analysis of these results.

***Pre-questionnaire results.*** The researcher found the mean (*M*), median (*Mdn*) and standard deviation (*SD*) for each statement within the anxiety section of the pre-questionnaires (Table 4.15). She also calculated the measures of central tendency for the entire section of statements (Table 4.16). The researcher focused on the median and mean scores of the results. The median for all anxiety statements was a 3 on a 5-point scale. A score of 3 on the Likert scale indicates the response “Neither Disagree or Agree.”

Table 4.15

*Measures of Central Tendency for Anxiety Statements on Pre-Questionnaire*

Anxiety Statements	<i>M</i>	<i>Mdn</i>	<i>SD</i>
I feel anxious or nervous when my teachers ask me to research a topic.	3.31	3	1.26
I feel anxious or nervous when my teachers give me a research assignment.	2.57	3	1.24
I think that researching is difficult.	3.08	3	0.98

Table 4.16

*Measures of Central Tendency for Anxiety Section on Pre-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Confidence	2.98	3	0.34

**Post-questionnaire results.** For the post-questionnaire, the researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for each anxiety statement. She also calculated the measures of central tendency for all the statements and the results of her the statistical analysis appear in Tables 4.17 and 4.18.

Table 4.17

*Measures of Central Tendency for Anxiety Statements on Post-Questionnaire*

Anxiety Statements	<i>M</i>	<i>Mdn</i>	<i>SD</i>
I feel anxious or nervous when my teachers ask me to research a topic.	2.85	3	1.38
I feel anxious or nervous when my teachers give me a research assignment.	2.84	3	1.41
I think that researching is difficult.	3.01	3	0.98

Table 4.18

*Measures of Central Tendency for Anxiety Section on Post-Questionnaire*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Anxiety	2.9	3	0.10

The median score of all anxiety statements on the post-questionnaire was 3 out of 5, where a 3 indicated the response “Neither Disagree or Agree.” Figure 4.3 shows the anxiety level score by student participant from pre- to post-questionnaire. Appendix P presents the increases and decreases in individual anxiety level score by student participant.

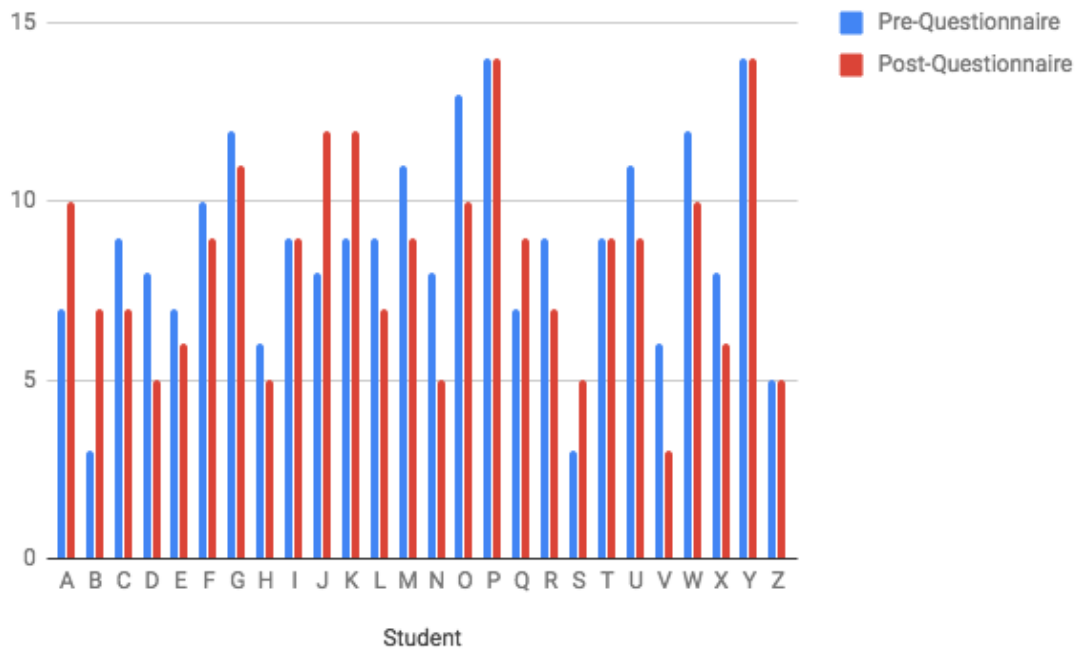


Figure 4.3 Anxiety scores by student participant

The researcher analyzed the mean scores from pre-questionnaire to post-questionnaire, as the median score remained the same ( $Mdn=3$ ). The individual means

and difference in means between pre- and post-questionnaire are shown below and in Table 4.19.

- “I feel anxious or nervous when my teachers ask me to research a topic” showed a decrease from the pre-questionnaire ( $M=3.31$ ,  $SD=1.26$ ) to the post-questionnaire ( $M=2.85$ ,  $SD=1.38$ ) with a difference in means of -0.46.
- “I feel anxious or nervous when my teachers give me a research assignment” showed a decrease from the pre-questionnaire ( $M=2.57$ ,  $SD=1.24$ ) to the post-questionnaire ( $M=2.84$ ,  $SD=1.41$ ) with a difference in means of 0.28.
- “I think that researching is difficult” showed a decrease from the pre-questionnaire ( $M=3.08$ ,  $SD=0.98$ ) to the post-questionnaire ( $M=3.01$ ,  $SD=0.98$ ) with a difference in means of -0.07.

Table 4.19

*Comparison of Anxiety Statements*

Anxiety Statement	Pre-Questionnaire			Post-Questionnaire			<i>Difference in Means</i>
	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>	
I feel anxious or nervous when my teachers ask me to research a topic.	3.31	3	1.26	2.85	3	1.38	-0.46
I feel anxious or nervous when my teachers give me a research assignment.	2.57	3	1.24	2.84	3	1.41	0.27
I think that researching is difficult.	3.08	3	0.98	3.01	3	0.98	-0.07



After examining the results by individual statements, the researcher compared the mean (*M*), median (*Mdn*), and standard deviation (*SD*) of the totals from the pre- to post-questionnaires. The median stayed the same (*Mdn*=3), but the overall mean score decreased from pre- to post-questionnaire (*M*=2.98, *M*=2.9) (Table 4.20).

Table 4.20

*Comparison of Anxiety Sections*

	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Scores from Pre-Questionnaire	2.98	3	0.38
Scores from Post-Questionnaires	2.9	3	0.10

The researcher used a repeated-measures *t*-test to examine if there were statistically significant differences in means between the pre- and post-questionnaires. The results of the researcher's statistical analysis appear in Table 4.21. Based on a statistical analysis of results, where  $t(25)=-0.50$ ,  $p=0.31$ , the difference between the students' anxiety levels before and after the intervention was not significantly different.

Table 4.21

*Statistical Analysis of Paired t-Test for Anxiety*

Hypothesis Test Results					
Difference	Mean	Std. Err.	DF	T-Stat	P-value
Post-Questionnaire - Pre-Questionnaire	-0.53	1.07	25	-0.50	0.31

**The Simple Four information literacy model.** On the post-questionnaire, there were six statements that addressed the Simple Four model (Alewine, 2006) and student participants could choose from the Likert scale responses of 1) Strongly Disagree, 2)

Disagree, 3) Neither Disagree or Agree, 4) Agree, and 5) Strongly Agree (Appendix M).

The researcher found the mean (*M*), median (*Mdn*), and standard deviation (*SD*) for the Simple Four responses. Table 4.22 presents the measures of central tendency for each statement based on the post-questionnaire responses by student participants. Table 4.23 presents the measures of central tendency for the Simple Four section.

Table 4.22

*Measures of Central Tendency for Simple Four Statements*

The Simple Four Statements	<i>M</i>	<i>Mdn</i>	<i>SD</i>
The Simple Four made research easier.	3.27	3	1.12
When given a research task, the Simple Four helped me to know where to begin.	3.46	3.5	1.02
When given a research task, the Simple Four helped me to know what to do next in the research process.	3.57	4	1.03
When given a research task, the Simple Four helped me to think about using sources that are trustworthy.	3.38	3	1.02
The Simple Four helped me to not feel anxious or nervous when my teacher asked me to research a topic.	2.88	3	1.03
The Simple Four helped me to feel more confident when my teacher asked me to research a topic.	3.15	3	0.97

Table 4.23

*Measures of Central Tendency for Simple Four Section*

Section	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Simple Four	3.29	3.32	0.25

The researcher examined statements that had a higher median score. The third item or “When given a research task, the Simple Four helped me to know what to do next in the research process,” had a higher median score ( $Mdn=4$ ), where 4 represented the response “Agree.” Nine students, or 34.62% of the class, responded with the “Agree” response and nine (or 34.62%) responded with the neutral response of 3. Figure 4.4 presents the numeral score, the number of students that selected each response, and the percentage of students that selected each response.

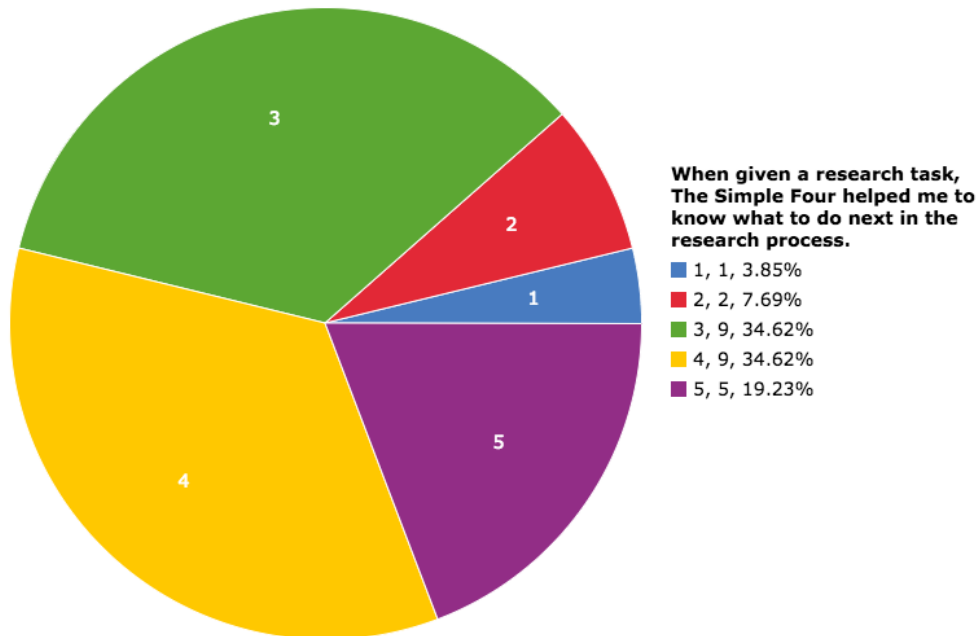


Figure 4.4 Responses for “when given a research task, the Simple Four helped me to know what to do next in the research process”

The statement “When given a research task, the Simple Four helped me to know where to begin,” had a slightly higher median score ( $Mdn=3.5$ ), where 3 stands for “Neither Disagree or Agree” and 4 stands for “Agree.” Nine students, or 34.62% of the class, responded with the “Agree” response and nine (or 34.62%) responded with the

neutral response. Figure 4.5 presents the numeral score, the number of students that selected each response, and the percentage of students that selected each response.

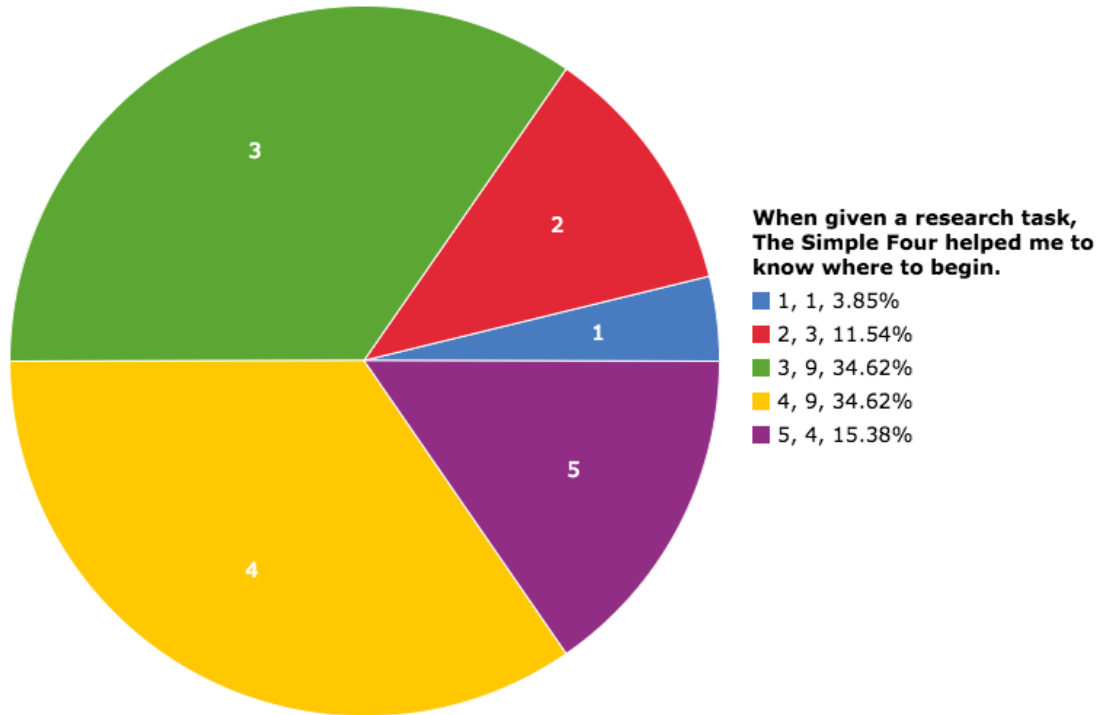


Figure 4.5 Responses for “when given a research task, the Simple Four helped me to know where to begin”

The other statements in the section had a median score of 3, which represents “Neither Disagree or Agree.”

### Interview Data

Individual student participant interviews occurred after each research task. These interviews provided supplemental data on the perceptions and attitudes of student participants towards (a) the Simple Four information literacy model (Alewine, 2006) and (b) the research process. The researcher interviewed student participants who scored the lowest in self-efficacy, confidence levels, and highest on anxiety levels during the research process. The researcher’s process in identifying these students included

compiling the pre-questionnaire scores from the student participants and combining the scores into one spreadsheet to identify students with the lowest self-efficacy, lowest confidence, and highest anxiety scores. The researcher interviewed 17 total students from the class. The researcher interviewed two of the student-participants only once due to their school absences during a significant portion of the first research task.

**Student A.** Student A had the lowest self-efficacy score during the research process on the pre-questionnaire. He also was on the higher end of the distribution of scores for higher anxiety (10/15) during the research process and scored in the bottom three scores for confidence levels (7/15) on the pre-questionnaire. His anxiety score on the pre-questionnaire was 7/15. He responded that the Simple Four model (Alewine, 2006) did make researching easier for him for the first research task because it provided him with “more of a guideline” with how to research and what sources to use. During the second interview after a second research task, he explained that the model made researching easier for him because it helped him to organize his information. When asked if it helped him to learn more, he explained that it helped him to remember what he had researched. With both interviews, he explained that the model helped him to feel more confident with researching because it helped him to “keep track” of what to do during the research process and it helped him to know what to do with his information. When asked about previous research tasks, he said he struggled with finding where to put information and had difficulty finding information. He thought that the Simple Four model (Alewine, 2006) provided him with “a guideline of how to research” and he believed that the model could help him with other assignments and classes.

**Student F.** Student F had a lower self-efficacy score (17/30), a lower confidence level score (9/15), and a higher anxiety level score (10/15) during the research process as indicated on the pre-questionnaire. When asked if the model made the research process easier for her during the first research task, she responded: “kind of, because it told you what to do next.” When asked the same question after the second research task, her response was that it “kind of” helped because it guided her with what sources to use. When asked if she learned more about the topic from using the model after the first research task, student F replied that she did not because she already follows the research process as outlined by the model. After the second research task, she indicated that she did learn more about her topic because she used the Simple Four model (Alewine, 2006). When asked if the model helped her to feel more confident, she believed it did not but thought it could help other students. Student F indicated that with previous projects she struggled with research tasks that were open-ended where students were not “given exactly what to look up or exactly what to use,” and also struggled with tasks that had numerous steps. She believed that the Simple Four model (Alewine, 2006) could help her with other assignments and in other classes and specifically indicated that it might help when writing essays.

**Student G.** Student G had a higher anxiety score (12/15) regarding the research process. He scored 23/30 on the self-efficacy portion and 12/15 on the confidence portion of the pre-questionnaire. When asked if the Simple Four model (Alewine, 2006) made the research process easier for his first research task, he stated that it did because he “could see what he was doing” and after the second task he replied that it helped him a “little bit.” He said it made him feel more confident because he knew where to find all of

his information. He thought the “Simple Four made it a little bit easier to do [research] because I don't know it just felt easier to do the Simple Four during the Thinglink [task] than it was for some of my other projects that I had to do.” After the second research task, he thought that it helped him to feel more confident because it helped him keep up with his sources. When asked during both of his interviews he reported that the model could help him with other assignments and in other courses.

**Student H.** The researcher interviewed Student H because of her lower self-efficacy score (18/30) and lower confidence score (7/15). Her anxiety score was 6/15. When asked if the model made researching easier for her during the first research task, she responded that the model helped her to organize her research and that it helps to organize “no matter what situation you’re in.” After the second research task, she indicated that the model helped her with researching because it helped her to organize and revise her work. When asked if she thought she learned more about her topic with the use of the model, she responded affirmatively and explained that the organization of the model made her write out information, which helped her to learn more. She explained that it helped her to realize “oh, I didn’t know this happened” and she was forced to look at the rubric, which helped her to realize “oh I need to research this.” After the second task, she explained that writing the information helped her but that having to go over the information multiple times aided in her learning the material. When asked if the model helped her to feel more confident when researching after the first task, she responded that it did because it organized the process for her “and with it in order, it was much easier.” When asked if the model helped her to feel more confident after the second task, she responded that it did because she knew where everything was.

At the same time, she felt stress because she had doubts about her work. When discussing other research projects, student H explained that this year she had found the process of organizing her information confusing. She believed that the model would have helped her in a previous research task, as it would have helped her to organize it better and it would have taken her less time. When asked if the model could help her with other assignments and in other classes, she responded in both interviews that she believed it could. She also stated that it could help with tasks outside of school, such as a task that a parent would give her to do as a chore around the house.

**Student I.** Student I was selected to be interviewed because she had a lower self-efficacy score (18/30), a lower confidence score (9/15), and a higher anxiety score (9/15). When asked if the model made researching easier, she responded that it did for both research tasks because it “told her what to do next.” When asked if the model helped her learn more about the topic after the research task, she replied that it did. However, after the second research task, she replied that the model did not help her to learn more about her topic. When asked if the model helped her to feel more confident, she replied that it might have, but that “she wasn’t sure.” When asked the follow-up question of why it might have, she said that it made her project easier but she “didn’t know” if it made her more confident. When asked to compare the research tasks to other research tasks she had completed, she discussed an ELA assignment that was overwhelming because she did not know where to look for information, and a science project that was easy because the teacher gave them the source to use. When asked if the model could help her with other assignments and in other classes, she thought it could help in ELA.



**Student K.** Student K had one of the lowest self-efficacy scores (15/30) and a lower confidence level score (8/15). She had an anxiety score of 9/15. Student K was absent during the first research task, so when interviewed, she was unable to answer any of the questions. However, she was present during the second research task and the researcher interviewed her after the second task. When asked if she believed if she learned more because she used the information literacy model, she responded that she did because “you had to really think about it and understand what you're actually talking about.” When asked if it helped her feel more confident when researching, she replied that it did because she had to think more about her topic and she “understood it more when you thought a lot about it.” She reported that using the model would have helped her with a previous science project because “you had to think more about what you were actually researching, and how you were doing it.” She believed that using the model helped her with her second research task in social studies because “I could easily think, because it's visual for me. I could build something. Once we used the Simple Four, it was easy for me to get thinking, going.” Student K also believed that the model could help her with other assignments and with other classes.

**Student L.** Student L had the lowest self-efficacy score (15/30) and a lower confidence score (9/15). Her anxiety score was 9/15. When interviewed after the first research task, she believed that the Simple Four model (Alewine, 2006) did make researching easier because it served as a guide for what she should do next in the process. After the second research task, she reiterated that the model helped her to know what to do next with the research task. When asked if the model helped her to learn more about her topic, she responded: “I think so because I had to go back and read about my topic.”

When asked if the model helped her to feel more confident after both research tasks, she replied that it did because she did not feel as “lost.” When asked if she thought the model could have helped her with previous assignments, she agreed that it “definitely would have” because she often feels overwhelmed when given a research task. She thought that the model could help her in other classes and with assignments in other classes.

**Student M.** Student M had a higher anxiety score (11/15) on the pre-questionnaire. Her self-efficacy score was a 25/30, and her confidence score was 10/15. When interviewed after the first research task, she thought that the Simple Four model (Alewine, 2006) did make researching easier for her during the first task because “it kind of helped you know what you wanted to research instead of just having all of this that you had to research.” When asked the same question after the second research task, she explained that the model made it easier because it helped her to develop a plan. When asked if the model helped her to learn more about her topic, she replied that it did because comparing her work to the rubric helped her to understand what was required to meet an “exemplary” status. The model helped her feel more confident because it helped her understand what to research and know what to do. When discussing a previous research task, she identified that she struggled because she was unsure of what to do and it took her a long time to figure out the steps to take. When asked if she thought the model could have helped her with her previous research task, she replied that she liked the Simple Four model (Alewine, 2006) because “it tells you what to do and plans it out for me.” She described the first research task as overwhelming because she had six topics to cover for her project, but that she enjoys researching. She believed that the model could help her with other assignments and in other courses in both interview sessions.

**Student O.** Student O had a higher anxiety level score (13/15) and a lower self-efficacy score (15/30) from the pre-questionnaire. When asked if the model made researching easier for him during the first research task, he explained that it did because it helped him understand what sources to use. When asked the same question after the second research task, he replied that the model did make researching easier for him because “it organized the steps that we needed to do each day.” When asked if the model helped him to feel more confident when researching, he explained that it did because it “helped him a lot” because he did not “[stress] about the topic” and was not “stressing about the work.” After the second research task, he responded that it helped him to feel more confident because it organized his sources for him. When describing why an earlier task was easier for him, he explained that more time to work on the project and set goals for himself and that it became difficult when the deadline approached, as he did not have it finished. When asked if the model could have helped him with his previous research task, he said it would have because it would have helped him lessen the stress concerning his research task. When interviewed a second time, he responded that the model could have helped him with a previous research task because it would have organized his work. Student O believed that the model could help him with other assignments and in other courses.

**Student P.** Student P had one of the highest anxiety level scores on the pre-questionnaire (14/15). Her self-efficacy score was a 21/30, and her confidence score was a 9/15. When asked if the model made research easier for her during task one, she replied that she was nervous at first because she had never used the model “but at the end I really liked it, and it did help.” Student P explained that she thought it helped because it

helped her to organize her research and sometimes she gets “stressed out” where to put everything when she researches. The model helped her to “put me in categories where I can separate things.” When asked the same question after the second research task, she stated that she gets “overwhelmed” during projects and that the model helped organize the research process for her. She believed that the model helped her to feel more confident when researching because it helped her and at the end of the task she felt more confident than she usually feels. After the second research task, she explained that the model helped her to feel more confident because it helped her to feel better about her work. When discussing previous research tasks, she identified that it was difficult for her because she found it overwhelming figuring out where to put all of her information because she did not plan that out. She believed that the model would have made the previous research task “way easier” for her. Student P believed that the model could help her with other assignments and in other courses.

**Student R.** Student R had a low confidence score (6/15), a higher anxiety score (10/15), and a self-efficacy score of 21/30. When asked if the Simple Four model (Alewine, 2006) made researching easier for him during the first research task, he stated that it helped him with the planning and organizing stages of the research process. After the second research task, he replied that he did not use the model as strictly but felt that it would have helped him. When asked if the model helped him to learn more about his topic, he replied, “I feel like I spent more time researching and organizing my information, rather than just throwing it all together.” For both interviews, he said that it made him feel more confident because he knew what to do and knew where all his information was. When asked if he thought it could have helped him with an earlier

research task, Student R indicated that it could have because with his other project he did not know where to start or what to do next. He believed it could help him with other assignments because “it’s nice to know what you’re doing.” In both interviews, Student R indicated that the model could help him in other classes.

**Student T.** Student T had a self-efficacy score of 19/30, a confidence score of 8/15, and an anxiety score of 9/15. For Student T, English was a second language, so her research tasks were modified by the teacher. She participated in the completion of Google Forms that outlined the Simple Four model (Alewine, 2006) as best she could. Because of her new skills of acquiring the language, she did not complete the research tasks in the same way as other students. The researcher used Google Translate to work with this student. Of the questions she was asked, she replied that she was unsure for most of her answers. Due to the anxiety brought on by the interview process, the researcher did not push this student in answering questions.

**Student U.** Student U scored lower on the self-efficacy portion of the pre-questionnaire (19/30) and had a higher anxiety score (11/15). His confidence score was a 9/15. When asked if the Simple Four model (Alewine, 2006) made researching easier for him during his first research task, he replied that it did because it helped him to know what sources to use. He also thought that he learned more about his topic because the model helped him to know what sources he could use. When asked if the model helped to make researching easier during his second research task, he replied that the model helped him to revise his work and helped him stay organized. He thought that the model helped him to feel more confident when researching during the first task because he knew the sources were reliable. When asked the same question after his second research task,

he replied that it helped him to feel more confident because it helped keep him organized. When speaking of previous research tasks, he mentioned that having more time to complete the task makes it easier for him and that he struggles with time management. When asked if the model could have helped him in previous research tasks, Student U first replied that he did not know and then thought it might because it could have helped him cite his sources. He thought that the model could with other assignments, except for math assignments, and he believed it could help him in other courses.

**Student W.** Student W was a candidate to interview because she had a lower confidence score (7/15), a higher anxiety score (12/15), and a lower self-efficacy score of (21/30). Student W was unable to be interviewed after the first research task because she was absent from school. She was present during the second research task, and when asked if the model helped make researching easier for her, she responded that it did because it helped her to check the rubric and if she had not done that then her product would not have had enough information. When asked if the model helped her to feel more confident during the second research task, she responded that it did because it helped her to “refer” to the project rubric. When asked if the model helped her to learn more about her topic, she said it did because it made her look at the project rubric and it helped her identify what she needed to do. Student W believed that the model could have helped her with a previous research task because it helped her know what to do and it would have forced her to check her rubric. She believed that the model could help her with other assignments and in other courses.

**Student X.** Student X had a lower self-efficacy score (17/30) and scored a 9/15 on the confidence portion of pre-questionnaire. Her anxiety score was a 9/15. When

asked if the model made researching easier for her during the first research task, she replied that it did because it helped her to think about whether or not the sources were trustworthy. When asked the same question after the second research task, she responded that it helped her to keep track of what she was doing. She was not sure if the model helped her to learn more about her topic during the first task, but she responded that it did help her to learn more about her topic during the second task because it made her think about the resources more. The model did help her to feel more confident because “it helped me think about things that I haven’t done so that I go back and do it later” during the first task. It helped her to feel more confident during the second task because it helped her to “review” her work. When discussing previous research tasks, she explained that the model could have helped her to revise her work and made sure it was of the “highest quality” and it could have helped her to “reflect” on the information she found during research. She thought the model could help with assignments that require “building” because it would force researchers to revise their work. She also believed it could help her in other courses.

**Student Y.** Student Y scored a 21/30 on the self-efficacy portion of the pre-questionnaire, and also had the lowest confidence score (5/15) and highest anxiety score (14/15). He believed that the Simple Four model (Alewine, 2006) did make researching easier during the first research task because “it kept track of my things that I already used so I didn't use more again. And, it helped me really get organized because I'm not really kind of organized a bit.” After the second research task, he indicated that the model did make researching easier because it helped to organize his thinking and sources to use. He responded that the model did help him to learn more about the topic because it helped

him to record all of his information. When interviewed a second time, he again responded that the model helped him organize his sources and research. When asked if the model helped him feel more confident during the first research task, he responded that it did because “no one will find it scary.” When asked the same question after the second research task he replied, “Yes because normally I’m really unorganized.” He found an earlier research task difficult because he had to evaluate and cite his sources. However, he thought that the model could have helped him with that project because it would have kept him organized to be able to turn in his work on time. Student Y believed that the model could help him with other assignments and in other courses.

**Student Z.** Student Z was a candidate to interview because he scored a 9/15 on the confidence portion of the interview. His self-efficacy score was a 28/30, and his anxiety score was 5/15. He responded that the model did not make researching easier for him during the first research task because he already does the process “without knowing it.” When interviewed after the second research task, he explained that the model was not helpful for him, but that it could be for other people. He thought that it “maybe” helped him to learn more about his topic when interviewed after the first and second research tasks. Student Z indicated that using the model did not make him feel more confident because he was already confident about researching. When asked if the model could have helped him with a previous research task, he responded that it could have because it would have helped him organize and “stay on track.” When discussing the first research task, he thought the model helped him to know where everything was. He thought the model could help with research assignments, but not math assignments. He believed that the model could help him in other courses.



**Themes from interviews.** The researcher had the interviews transcribed and then compared the transcriptions to the interview recordings to assess for any discrepancies. The researcher stored all interview data in the NVivo software and then coded the transcripts to examine any emerging themes by creating Nodes in the software. The researcher read and re-read transcriptions and developed the nodes SF (Student Feelings), CHAL (Challenges to Middle School), HELP (Help with Other Assignments and Course), InfoF (Information Finding), META (Metacognition), ORG (Organization), REV (Revision), TRAN (Transfer of Knowledge), and SOU (Sources). Simultaneous coding took place within a single datum. The researcher then described in narrative form what the themes meant with how the Simple Four model (Alewine, 2016) affected sixth-grade students' information seeking behavior. She interpreted the information that had been organized and described to answer the research questions. From the data analysis of the interviews, the researcher applied an inductive analysis, where the following themes emerged (Figure 4.6).



Figure 4.6 Emerging themes from data analysis

***Organization.*** The findings from the interviews included the themes that the Simple Four model (Alewine, 2006) helped student participants to organize their work, their research, and their thinking about their research. Student R liked to use the model because it helped him to know what to do next in the research process because he “knows what [he is] doing and how [he is] going to do it.” Many student participants used the words “keep track” or “guideline” when discussing why the model made researching easier for them during their research tasks. Student M believed that the model helped her to understand what she was supposed to research.

***Help with sources.*** Another theme that emerged from the interviews was that the model helped student participants to understand, remember, and to use their sources. Student U believed that it helped him to know what sources to use because he had to write them down. Because he was asked to write his sources, Student U realized he could use a source that he “didn’t realize was a source at first.” Student O discussed how the model helped him keep “track” of the sources that he had already used so he could use more sources. Student G believed that recording the sources he used every day helped him to remember sources and that it helped him to refer back to sources because he did not have to “pull [them] from memory.” Several student participants believed that the model “told them” what sources to use, even though they had to input the sources on the form.

***Reduction in negative feelings.*** For some student participants, the model reduced negative feelings such as stress. Student P commented that she usually is “stressed out about where to put everything” and the Simple Four (Alewine, 2006) helped her organize

her work so she could understand the research process by “categories.” She commented that at the end of her research task, she felt “more confident than [she] usually feels.” Student O believed the model “helped him out a lot” because he did not have to stress about the topic or the work. Student Y found the model helpful because it made it so that “no one will find it scary” when he/she received their research topic. He also indicated that he was “not worried at all” about his second research task because he had the Simple Four model (Alewine, 2006) to use. Student M stated that she is not comfortable with researching but that the model helped her to know what to do and she believed she would be more comfortable with the next research task.

***Transfer of knowledge.*** Two student participants mentioned the transfer of knowledge using the model in other situations. In her first interview, Student H discussed how the model could help her in other assignments, such as one given by her mother at home to clean the bathroom. Because the model helped her organize, she believed it could help her with chores to organize her work. Student M discussed a research task she was working on in English Language Arts class and with “the DDT project, I already knew what to do kind of, because I had already used the Simple Four, I think if I already knew you should do this and brainstorm, and then plan out what you’re going to do. Then whenever you’re done, reflect and make it better.”

***Metacognition.*** Several student participants thought the model helped them to think about their work differently. Student X responded that the model helped her to think about “things [she had] not done so that [she] could go back and do it later.” The model also helped her to think more deeply about the sources she used, and she believed she learned more about her topic and had a better understanding of the topic because of

the model. Student K thought that the model helped her to think about her topic more and it helped her better understand her topic. She said that “[she] understood it more when you thought a lot about it” and that the model helped her to “get thinking, going.” Student M believed the reflection stage of the model was helpful to her because it made her look at the rubric and compare her work to the rubric “instead of just guessing.”

**Revision.** In the interviews, several students commented on how the model helped them to revise their work. Student G discussed how the model gave him the option to “go back” and review his sources if he wanted or needed to. Student M commented that the model helped her to look over the rubric to ensure that her work met the exemplary category of the rubric. Student W discussed at length how the model helped her to compare her work to the rubric and that this step in the process helped her. Student U responded that the model helped him to “revise and see if his research was credible.” Student X believed that the model helped her review her work so that she could use it and better understand it.

### **Participant-Observation Data**

The researcher used NVivo software to code the field notes by creating nodes within the software. The researcher found that the patterns in behavior included the codes PLAN (planning research), QU (student questions), and SOU (sources). Themes that emerged from the coding of the field notes included: 1) most students were able to complete the Planning stage accurately, 2) most students were able to list the appropriate sources they needed to use for the research tasks, 3) some students had questions concerning sources to use, 4) some students were confused about whether or not the teacher was asking for a list of works cited for each research task, 5) some students did

not take their time completing the forms, and 6) some students had questions about how to use the Google Forms.

### **Summary**

This chapter explored the findings of the research question: “How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?” It also sought to answer, “How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?” The study had a sequential explanatory research design, and the researcher collected data through the use of pre- and post-questionnaires, semi-structured interviews, and participant observations. The researcher analyzed the quantitative data through descriptive statistics, such as the measures of central tendency from responses from the questionnaires. The researcher used inferential statistics with a repeated-measures *t*-test on items 1-12 of the pre- and post-questionnaires. The researcher used an inductive approach to analyze the qualitative data.

The results from the quantitative findings suggested that students’ use of the Simple Four model (Alewine, 2006) led to statistically significant increases in their self-efficacy and confidence levels. However, there was no significant decrease in their anxiety levels from the intervention. Some students agreed that the model helped them know where to begin (34.62%) and some agreed that it helped them to know what to do next (34.62%). The qualitative findings indicated that students found the model helpful in the organization of their research and their sources, and it helped them to know what to do next in the research process. Specifically, the Simple Four helped some student

participants to know and better understand their sources, and some students found the model helpful because it reduced stress during the research process. It helped several students to think about their thinking regarding the research process, the information they were learning, or their sources. Lastly, the model helped some student participants revise and reflect on their work, and two student participants transferred their new knowledge of the research process to other tasks outside of the social studies classroom.

## CHAPTER 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### **Introduction**

Chapter 5 begins with a description of the overview of the study, including the Problem of Practice, the purpose of the study, and research questions. It will also discuss the methodology employed, followed by the findings. The next sections of the dissertation describe how the action researcher will serve as a curriculum leader and will offer recommendations for the practice of teaching information literacy skills to students. Finally, the implications for further research and a summary will conclude the dissertation.

Information literacy skills are essential for the academic, professional, and personal needs of all individuals. To be information literate, or to have the ability to recognize when information is needed and to be able to locate, evaluate, and use the information are skills needed both inside and outside of the classroom (ALA, 1989). Research shows that students are unprepared for the information literacy demands of higher education or the workplace and a district-wide assessment illustrated how students at Midlands Middle School lacked information literacy and research strategies skills (Katz, 2007; Learning.com, 2016; Raish & Rimland, 2016; Saunders, Severyn, & Caron, 2017; Varlejs, Stec, & Kwon, 2014). Students may encounter specific difficulties when working with information and seeking information, such as feeling frustrated when given an assignment, or they may have language, resource, or ICT anxiety, lack of content

knowledge, and a shallow engagement with resources and texts (Kuhlthau, 1985, 1988, 1989, 1991; Large, Nasset, & Beheshti, 2008; Naveed & Ameen, 2016).

Discussions with classroom teachers and observations of students in the library indicated that many students struggled with the research process at Midlands Middle School, where research projects are commonplace in the Expeditionary Learning (EL) curriculum. In particular, sixth-grade teachers voiced their concerns with the level of research skills that students bring to the middle school level, as they often are not prepared. These concerns led to the development of the Problem of Practice for this action research study. The researcher wanted to explore the effects of students using an information literacy model, as the school did not have a school-wide model and teachers were not teaching a research process model to students. Research has shown that information literacy models can be helpful for both students and teachers (Greenwell, 2016; Herring, 2009; Nasset, 2013; Neuman et al., 2015; Probert, 2009). However, these studies also show that scaffolding may be required for many students to effectively use these models (Nasset, 2013; Neuman et al., 2015).

The purpose of this study was to examine the effects of an information literacy model designed for the students of South Carolina and explore how students' behaviors and feelings might be affected. The purpose also included filling a niche in the research literature, as there are no known studies on the Simple Four model (Alewine, 2006). Many studies explore the effects of using an information literacy model, but no known study that looks at the evaluation and application of the model through the student lens and the effects it may have on students' confidence and anxiety levels when seeking information. The study sought to answer the questions, "How will teaching the Simple



Four information literacy model (Alewine, 2006) to sixth-grade students affect their information seeking behavior?” and “How will teaching the Simple Four information literacy model (Alewine, 2006) to sixth-grade students affect their confidence and anxiety levels when seeking information?”

### **Methodology**

The researcher used a sequential explanatory design for the study, as this allowed the researcher first to collect quantitative data and then collect qualitative data, which helped to explain or support the quantitative results. Pre- and post-questionnaires collected quantitative data on students’ self-perceived self-efficacy, confidence, and anxiety levels during the research process. The post-questionnaire also gathered student feedback on the Simple Four model (Alewine, 2006). The researcher used semi-structured interviews as well as participant observations to collect qualitative data.

The researcher collaborated with a school social studies teacher and her students for the study. The study took place over the course of 6 weeks during the spring semester of 2018 in a suburban middle school in South Carolina. The researcher worked with the classroom teacher to integrate the Simple Four model (Alewine, 2006) during two research tasks assigned for students to complete during class time. The class that participated was representative of the entire sixth-grade class regarding ethnicity and ratio of females to males.

The data collection instruments used in this study included pre-questionnaires, participant observations, semi-structured interviews, and post-questionnaires. The researcher created the pre- and post-questionnaire based on two factors; firstly, the negative feelings in Kuhlthau’s ISP model when individuals seek information; and

secondly, the research process as outlined by the Simple Four model (Alewine, 2006). The pre-questionnaire contained items where students rated their agreement or uncertainty with statements using a Likert or Likert-type scale. The pre-questionnaire was composed of items that addressed self-efficacy, confidence, and anxiety in the research process. The post-questionnaire was identical to the pre-questionnaire, except for six additional statements that addressed how students viewed the Simple Four model (Alewine, 2006) during their research tasks. Students selected Likert scale responses to capture their level of agreement with the statements. The researcher created the interview guide and consulted her PLC to review the questionnaires and the guide. The researcher made observations of student behavior and recorded field notes from an adapted template from Mertler (2014).

At the beginning of the study, all students completed a pre-questionnaire that collected how they felt about their ability regarding the research process, as well as their confidence and anxiety levels when researching. The researcher reviewed the scores of the students and created three different spreadsheets that recorded the lowest scores of self-efficacy and confidence, as well as the highest anxiety. The researcher then compiled these scores into one spreadsheet and identified students to interview. The researcher taught the Simple Four model (Alewine, 2006) to the 26 students over the course of 2 weeks and created Google Forms that the students could record their answers to the questions the model asked. The teacher and researcher instructed students to review their answers so that they knew what to do each day. As students were completing the forms and working on their research tasks, the researcher observed the students and created field notes. The researcher was able to observe students a total of 11

times over the course of the study. After students completed each of their research tasks, the researcher interviewed the students on the compiled list. The researcher continued to review and teach the Simple Four (Alewine, 2006) during the second research task. The researcher recorded observations as field notes and interviewed students after the second research task. All 26 students completed the post-questionnaire at the end of the study.

### **Findings**

In order to answer the research questions, the researcher analyzed the quantitative data from the questionnaires with descriptive statistics and inferential statistics. The researcher analyzed the qualitative data from the interviews and observational field notes with inductive analysis. The results from the quantitative findings suggested that students' use of the Simple Four model (Alewine, 2006) led to significant increases in their self-efficacy and confidence levels. However, there was no significant decrease in their anxiety levels from the intervention. From the post-questionnaire, some students agreed that the model to help them know where to begin (34.62%) and some agreed that it helped them know what to do next (34.62%).

Data from the field notes and interviews produced more detailed responses from students concerning the research process and the Simple Four model (Alewine, 2006) in the form of themes. The qualitative findings indicated that students found the model helpful in the organization of their research and sources, and it helped them to know what to do next in the research process. Students thought that the Simple Four model (Alewine, 2006) helped them to organize their work, their research, and their thoughts about their work. Many responded that the model helped students to think about their source and reminded them of which sources to use. Students expressed a reduction in

negative feelings such as stress when they used the model. Two students were able to transfer the use of the model in other situations when speaking about the helpfulness of the model. The theme of metacognition also emerged from the interviews, as students commented on how the model helped them to think about their work differently. Students also found the model helpful in revising their work, as it reminded them to look at the rubric, sources, or their research. Data from the field notes showed that most students efficiently and accurately completed the planning stages of both research tasks and that many students had questions regarding sources to use, whether or not they needed a works cited page, and how to use the Google Form(s).

### **Action Researcher as Curriculum Leader**

The researcher has recently changed positions in her field and is now a librarian who serves first-year students at a larger university in rural South Carolina. Although the researcher is not considered a school librarian, her role and responsibilities are similar. Although she is no longer responsible for a school library space or a school library program, teaching information literacy skills to students remains a significant part of her job duties. Additionally, the researcher is no longer working with middle school students, she is working with students who are new to college, whether traditional or untraditional first-year students. She collaborates with English professors to integrate information literacy lessons into their curriculum and designs and teaches other learning experiences for undergraduates in the form of workshops and orientations. She teaches other librarians how to implement information literacy lessons into the English curriculum, as there is a team of librarians that help instruct these sessions for students. The researcher witnesses first-hand how many first-year students struggle with the

research process. In order to stay connected to student learning needs, she will continue to be a contributing member and advocate of the school library profession. With future outreach initiatives, the researcher would also like to collaborate with high school teachers and librarians to work with students to help prepare them for college-level research.

With this new role and responsibilities, the researcher should be able to influence the curriculum on multiple levels. As a curriculum leader, she provides expertise on information, resources, and instruction to public and university patrons. As a teacher, instructional partner, and information specialist, she develops curriculum, co-teaches with instructors and works with outreach programs across the university. Sergiovanni (1994) discusses how a school curriculum can be used to build community by bringing together members of a community for a shared set of values and ideas where they can work together for a united action plan. By collaborating with classroom instructors and outreach programs on campus, the researcher can coach, guide, and plan learning experiences that help support the educational platform at her university and library to help bring the school community together.

### **Action Plan**

The results from the quantitative findings suggested that students' use of the Simple Four model (Alewine, 2006) led to significant increases in their self-efficacy and confidence levels. The qualitative findings indicated that many students expressed that they found the model beneficial. The ways that the model helped students in the research process is vital for other librarians and educators to understand in order to help students in the research process. Even though the researcher is no longer working at Midlands

Middle School and is no longer a school librarian, she plans to stay connected to the field. By keeping abreast of the learning needs of students and trends in the K-12 field, she can better support first-year college students. The researcher's action plan consists of two steps: 1) sharing the results of the study with school librarians in the state of South Carolina, and 2) sharing the results with appropriate audiences at the secondary and post-secondary level.

Sharing the results of the study with school librarians in South Carolina is planned to take place in the fall of 2018 at a state level conference. Because the model was designed for the students of South Carolina, school librarians can disseminate this information at their schools as they work with classroom teachers because they are the information literacy experts in their schools. As the researcher is now able to help equip first-year college students with research skills, she also plans to share the results with secondary and post-secondary audiences. The dissemination of information may be in the form of outreach sessions to high school students, teachers, and librarians, as well as in the sharing of the results with post-secondary teaching librarians to begin the conversation about information literacy models and undergraduate student learning needs.

### **Social Justice**

People should have a right to information that can help them improve their lives (ACRL, 1989). With information and communication technologies rapidly changing, people are surrounded by information in various formats. In the Information Age, "information literacy is a survival skill" and is necessary for personal, academic, and business needs (Nair, 2006, p. 7). Information literacy skills can potentially address

many social and economic inequalities in our information society (ACRL, 1989). Businesses, governmental, and educational organizations acknowledge the importance of information literate individuals, as there are initiatives in these sectors to improve information literacy skills and they have recognized it as an essential skill of the 21<sup>st</sup> century (Saunders, Severyn, & Caron, 2017). Providing students with a scaffold to help them locate, organize, and use information effectively and ethically, and simplify the research process can help them to be information literate. When students feel more successful accessing and using information, the social and economic inequalities in our society can potentially be reduced.

This study honors the voices of children and their insights and opinions with using an information literacy model. Studies that explore the effectiveness and benefits of information literacy models use teacher/instructor feedback as well as student feedback to measure the effectiveness and weigh the benefits of the model (Greenwell, 2016; Herring, 2009; Nasset, 2013; Neuman et al., 2015; Probert, 2009). Through the use of student responses from questionnaires, the observations of student behaviors, and interviews with students, the student's voice is symbolically represented in this study. The methodology selected in this study took the recommendations from other studies and filled the research niche of looking at the benefits of using an information literacy model from the perspective of students only.

### **Recommendations for Practice and Implications for Future Research**

The results from the quantitative findings suggested that students' use of the Simple Four model (Alewine, 2006) led to significant increases in their self-efficacy and confidence levels. The qualitative findings indicated that many students benefited them

during their research tasks. Educators should explore information literacy models and examine how they can implement them into their teachings and classrooms. The social studies teacher in this study recognized that her students liked the model and she has implemented the model in her classroom. Librarians may already have a model they work with when they teach and instructing teachers in how to use the model might benefit their students as well. Librarians need to support classroom teachers in implementing the model to find ways to simplify the research process for students.

There are limitations with this study and the results of the study that offer implications for future research. Because this study is limited to one class of sixth-grade students at one middle school over a 6-week timeframe, results cannot be generalized. Another limitation includes students trying to please the researcher, as they knew she was a guest in their classroom and that she wanted to learn with them. Although the researcher asked for students' honest feedback and answers to questions, the researcher recognizes that she is an adult asking questions to students. The researcher interviewed as many students as possible but faced the barriers of time constraints and student absences, so a complete context of how all students felt about the research process and about the information literacy model is limited. Lastly, the acquisition of knowledge and skills over time can influence the results. Some students' scores may have increased because they became more comfortable with the research process over time or became more comfortable with the assignments given to them.

Based on this study, further research needs to take place with the Simple Four model (Alewine, 2006). First, it would be helpful for the librarian to work more closely with the classroom teacher to help integrate the model into other assignments and in



structuring those assignments earlier in the year. The completion of two research tasks in a limited time frame are not enough to fully integrate the model into a class. Future studies need to extend this timeframe. Another area in need of further exploration is how the model is meeting the needs of all types of learners, including English Language Learners. In this study, Student T struggled to use the model and participate in the interviews, and more research is needed on how the model can be used effectively with English Language Learners and other populations. In addition, research on how the model or similar models support students with learning differences needs to be explored. Further research can also include working with English Language Arts teachers to examine the effects of using the model in their classes, where many traditional research tasks are assigned, such as research papers. This study examined how students viewed the model, and future studies could look at how teachers view the model in their instructional design and what they see as the effects on their students or their teaching. Research could be conducted on the delivery of materials, as this study used Google Forms, and there are many tools to deliver content and information literacy models. How high school and post-secondary students might benefit from the Simple Four model (Alewine, 2006) needs to be explored as well. The findings in this study showed that the anxiety levels of students did not lessen with the use of the model, yet their self-efficacy and confidence levels did increase. A better understanding of the anxieties of students could provide insight into how educators can meet the needs of their students. Further research on the larger context of anxiety among students within schools needs to be conducted so that educators can equip students with the proper tools and resources needed to succeed.

## **Summary**

This action research study explored how the implementation of an information literacy model within the social studies curriculum affected the information seeking and affective behaviors of sixth-grade students. Students articulated the benefits of using the model, and the researcher will share these benefits with other school librarians in the state of South Carolina, as well as other appropriate audiences. This study used an intervention as a form of social justice, as the methodology honored the voices of students, as its purpose was to close the information literacy hurdles experienced by young people. Student benefits need to be shared with others so that school librarians and educators can provide similar scaffolds for student learning and inquiry.

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## APPENDIX A

### THE SIMPLE FOUR MODEL DESCRIPTION

Martha Alewine (2006), from the South Carolina Department of Education, is credited for the development of the Simple Four research/problem-solving model. Because this model is used for problem-solving and research, its steps can be cyclical and non-linear in nature.

In Step 1 of the model, students plan. At this stage, students are engaging with their topic or research task, as well as thinking about what information they need to complete the task. Step 2 requires that students act on their plan. They need to prioritize a list of possible sources of information, access those sources, extract relevant information, and evaluate the sources for credibility, authority, and relevancy. In Step 3, student organize, or students are making decisions about their information and their research task or assignment. They demonstrate what they have learned by completing the project and documenting the sources they used. Step 4 asks for students to reflect. In this step, students evaluate their product and the research process.

## APPENDIX B

### ISTE STANDARDS ASSESSMENT SCORES FOR EIGHTH GRADE STUDENTS

<b>Standard Assessed</b>	<b>Highest Score Possible</b>	<b>School Average</b>	<b>District Average</b>
3a. Plan strategies to guide inquiry.	3	1.61	1.45
3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	3	1.46	1.37
3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.	3	2.05	1.87
3d. Process data and report results.	3	2.14	1.9

## APPENDIX C

### PRE- QUESTIONNAIRE

**Directions:** Select the response “Strongly Disagree,” “Disagree,” “Neither Disagree or Agree,” “Agree,” or “Strongly Agree.”

1. When given a research task, I know where to begin.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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2. When given a research task, I know what to do next.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

3. When given a research task, I know where to go to get information.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

4. When given a research task, I think about whether or not a source is trustworthy.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

5. When given a research task, I think about how to organize all the new information I have gathered.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

6. After I have completed a research task, I think about or reflect on what I would do differently next time.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

7. I feel anxious or nervous when my teachers ask me to research a topic.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

8. I feel anxious or nervous when my teachers give me a research assignment.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
----------------------	----------	------------------------------	-------	-------------------

9. I think that researching is difficult.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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**Directions:** Answer the following questions by selecting the following answers: “I feel very uncertain,” “I feel uncertain,” “I feel neither uncertain nor confident,” “I feel confident,” or “I feel very confident.”

10. How do you feel about the research process and all the steps you take when researching?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
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11. How confident do you feel when your teachers ask you to research a topic you don't know much about?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
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12. How confident do you feel when your teachers give you a research assignment as a summative?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
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## APPENDIX D

### POST-QUESTIONNAIRE

**Directions:** Select the response “Strongly Disagree,” “Disagree,” “Neither Disagree or Agree,” “Agree,” or “Strongly Agree.”

1. When given a research task, I know where to begin.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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2. When given a research task, I know what to do next in the research process.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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3. When given a research task, I know where to go to get information.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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4. When given a research task, I think about whether or not a source is trustworthy.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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5. When given a research task, I think about how to organize all the new information that I have gathered.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

6. After I have completed a research task, I think about or reflect on what I would do differently next time.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

7. I feel anxious or nervous when my teachers ask me to research a topic.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

8. I feel anxious or nervous when my teachers give me a research assignment.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

9. I think that researching is difficult.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

**Directions:** Answer the following questions by selecting the following answers: “I feel very uncertain,” “I feel uncertain,” “I feel neither uncertain nor confident,” “I feel confident,” or “I feel very confident.”

10. How do you feel about the research process and all the steps you take when researching?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
-----------------------	-------------------	---	-------------------	------------------------

11. How confident do you feel when your teachers ask you to research a topic you don’t know much about?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
-----------------------	-------------------	---	-------------------	------------------------

12. How confident do you feel when your teachers give you a research assignment as a summative?

I feel very uncertain	I feel uncertain.	I feel neither uncertain nor confident.	I feel confident.	I feel very confident.
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**Directions:** Answer the following questions by selecting the following answers: “Strongly Disagree,” “Disagree,” “Neither disagree or agree,” “Agree,” or “Strongly Agree.”

13. The Simple Four made research easier.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

14. When given a research task, the Simple Four helped me to know where to begin.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
-------------------	----------	---------------------------	-------	----------------

15. When given a research task, the Simple Four helped me to know what to do next in the research process.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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16. When given a research task, the Simple Four helped me to think about using sources that are trustworthy.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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17. The Simple Four helped me to not feel anxious or nervous when my teacher asked me to research a topic.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
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## APPENDIX E

### INTERVIEW GUIDE

#### **Semi-Structured Interview Guide**

Student Gender: \_\_\_\_\_ Student Name: \_\_\_\_\_

Today I'm going to ask you some questions about how you feel about researching and the Simple Four. Researching can include finding out more about a topic that your teacher gives you.

1. Can you tell me the four steps of the Simple Four?
2. Did the Simple Four make researching easier? Why or why not?
3. Do you feel like you learned more about your topic because you used the Simple Four?
4. Does the Simple Four help you to feel more confident when researching? Why or why not?
5. Tell me about a research project you've done in the past. It could be the biography research project in ELA, the scientist research project in STEM, or the Roman museum research project in social studies? Was it difficult or easy? Why? Would it have been easier if you had used the Simple Four?
6. Compare this research project with one you did earlier this year.
7. Do you think the Simple Four could help you with other assignments? Could it help you in other classes?

APPENDIX F  
RESEARCHER FIELD NOTES

**Researcher Field Notes**

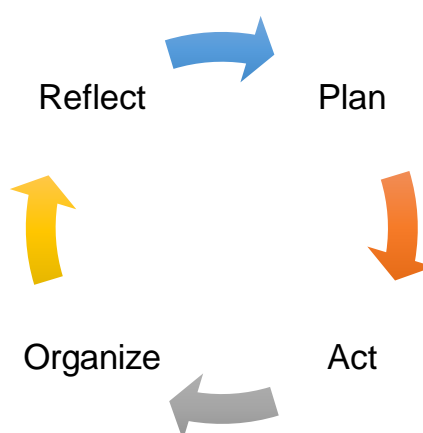
<b>Date _____</b> <b>Time _____</b>	<b>Observations</b>	<b>Observer's Comments (OC)</b>

## APPENDIX G

### THE SIMPLE FOUR GRAPHIC ORGANIZER

Name: \_\_\_\_\_ Period: \_\_\_\_\_

The Simple Four  
Research Process



**Directions:** Read through each step of the research process. Answer **ALL** of the questions in complete sentences.

#### Step 1: Come up with a Plan

1. What is your teacher asking you to do? What is your assignment?
2. What do you already know about your research topic?
3. What sources (books, websites, notes, etc.) might help you with your research?

#### Step 2: Act on Your Plan

1. Now it is time to act on your plan. Write your sources on the lines below and circle your answer to the question.

**Source 1:**

Is this source trustworthy or credible?	YES	NO	I Don't Know
---	-----	----	--------------

**Source 2:**

Is this source trustworthy or credible?	YES	NO	I Don't Know
---	-----	----	--------------

**Source 3:**

Is this source trustworthy or credible?   YES                      NO                      I Don't Know

2.      Next, you will start taking notes from your sources. Where will you record these notes?

3.      Have you cited all of your sources?   YES                      NO                      I Don't Know

Step 3: <u>Organize</u> Your information
--

1.      What is your final product?

2.      Have you looked at your rubric?   YES      NO

3.      What part of the rubric do you need to work on?

4.      Do you need additional information for your final product to be complete?  
YES   NO

5.      Have you completed a rough draft of your final product?   YES      NO

Step 4: <u>Reflect</u> on your work and your research process
---

1.      Is my final product complete and is it high quality work?   YES      NO

2.      What went well for me during this research project?

3.      For your next research task, what will you do differently next time?

## APPENDIX H

### THE SIMPLE FOUR GOOGLE FORM

#### The Simple Four: Plan, Act, Organize Reflect

\* Required

Email address \*

Your email

#### Developing a Plan!

In this stage, planning means that you are thinking about the topic or assignment and deciding what you know about the topic; what you want/need to know about the topic; and what information you need about your topic to complete your assignment or research project.

-What is your teacher asking you to do?

Your answer

-What do you already know about your topic?

Your answer

-What sources (books, websites, notes, etc.) might help you with your research?

Your answer

NEXT

Never submit passwords through Google Forms.

## The Simple Four: Plan, Act, Organize Reflect

### It's time to Act on your Plan!

As you ACT on your plan, you must prioritize your list of possible sources of information, find those resources, work with those resources to find the relevant information and then evaluate the information for credibility, authority, and relationship to the topic or assignment.

-You will be taking notes from your sources to extract relevant information for your final product. Where will you record these notes?

Your answer \_\_\_\_\_

**Now you are ready to start reading! As you use a source, record those sources below and be specific. For example, write "M-4" instead of "articles."**

-I used the following source:

Your answer \_\_\_\_\_

-Is this source reliable?

☐ Yes

☐ No

☐ I don't know.

-I used the following source:

Your answer

---

-Is this source reliable?

- ☐ Yes
- ☐ No
- ☐ I don't know.

-I used the following source:

Your answer

---

-Is this source reliable?

- ☐ Yes
- ☐ No
- ☐ I don't know.

-I used the following source:

Your answer

---

-Is this source reliable?

- ☐ Yes
- ☐ No
- ☐ I don't know.

-If your teacher is requiring you to provide a Works Cited/References list, have you done this?

- ☐ Yes - Continue to the next question.
- ☐ No - Complete this if your teacher is requiring of you.
- ☐ It is not required. Continue to the next question.

BACK

NEXT

Never submit passwords through Google Forms.

## The Simple Four: Plan, Act, Organize Reflect

\* Required

### Time to organize your information!

When you ORGANIZE your information, you make decisions about that information and your topic or assignment. During this phase, you create your final product (e.g., paper, multimedia presentation, web page, podcast). This is the phase where you demonstrate what you have learned.

-What is your final product?

Your answer

-Have you completed a rough draft of your final product? \*

- ☐ Yes - Move to the next question.
- ☐ No - You need to revise your draft today. Complete this form the best you can and submit it today.

BACK

NEXT

Never submit passwords through Google Forms.



## The Simple Four: Plan, Act, Organize Reflect

### It's time to reflect on your work and your research process!

When you REFLECT, you are evaluating your final product as well as your research process. During this phase, student work may be submitted for peer review.

Have you compared your product to the rubric?

- ☐ Yes
- ☐ No

BACK

NEXT

Never submit passwords through Google Forms.

## The Simple Four: Plan, Act, Organize Reflect

### Evidence of Exemplary Work

Compare your product to the rubric to complete the following task.

Provide evidence of how you have met Exemplary on all parts of the rubric.

Your answer

---

BACK

NEXT

Never submit passwords through Google Forms.

# The Simple Four: Plan, Act, Organize Reflect

## Evidence of How to Meet Exemplary

Compare your product to the rubric to complete the following task.

Provide evidence of what you need to work on to achieve Exemplary on all parts of the rubric.

Your answer

---

BACK

NEXT

Never submit passwords through Google Forms.

# The Simple Four: Plan, Act, Organize Reflect

## Research Process Reflection

-What went well for you during this research project?

Your answer

-For your next research task, what will you do differently next time?

Your answer

☐ Send me a copy of my responses.

BACK

SUBMIT

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## APPENDIX I

### EMAIL RESPONSE FROM SIMPLE FOUR FORM - SAMPLE



Thanks for filling out [Copy of Step 1 - Planning Stage](#)

Here's what we got from you:

## Copy of Step 1 - Planning Stage

In this stage, planning means that you are thinking about the topic or assignment and deciding what you know about the topic; what you want/need to know about the topic; and what information you need about your topic to complete your assignment or research project.

**Email address \***

[example](#)

**-What is your teacher asking you to do? \***

Complete research on my topic.

**-What do you already know about your topic? \***

We've talked about feudalism in class. It has to do with knights.

**-What sources (books, websites, notes, etc.) might help you with your research? \***

textbook, videos, notes

## APPENDIX J

### SELF-EFFICACY STATEMENTS AND RESPONSES

<b>Self-Efficacy Statements</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>
When given a research task, I know where to begin.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, I know what to do next.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, I know where to go to get information.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, I think about whether or not a source is trustworthy.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, I think about how to organize all the new information I have gathered.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
After I have completed a research task, I think about or reflect on what I would do differently next time.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5

## APPENDIX K

### CONFIDENCE QUESTIONS AND RESPONSES

<b>Confidence Questions</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>
How do you feel about the research process and all the steps you take when researching?	I feel very uncertain. 1	I feel uncertain. 2	I feel neither uncertain nor certain. 3	I feel certain. 4	I feel very certain. 5
How confident do you feel when your teachers ask you to research a topic you don't know much about?	I feel very uncertain. 1	I feel uncertain. 2	I feel neither uncertain nor certain. 3	I feel certain. 4	I feel very certain. 5
How confident do you feel when your teachers give you a research assignment as a summative?	I feel very uncertain. 1	I feel uncertain. 2	I feel neither uncertain nor certain. 3	I feel certain. 4	I feel very certain. 5

## APPENDIX L

### ANXIETY STATEMENTS AND RESPONSES

<b>Anxiety Statements</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>
I feel anxious or nervous when my teachers ask me to research a topic.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
I feel anxious or nervous when my teachers give me a research assignment.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
I think that researching is difficult.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5

## APPENDIX M

### THE SIMPLE FOUR STATEMENTS AND RESPONSES

<b>Simple Four Statements</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>	<b>Response and Value</b>
The Simple Four made research easier.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, the Simple Four helped me to know where to begin.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, the Simple Four helped me to know what to do next in the research process.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
When given a research task, the Simple Four helped me to think about using sources that are trustworthy.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
The Simple Four helped me to not feel anxious or nervous when my teacher asked me to research a topic.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5
The Simple Four helped me to feel more confident when my teacher asked me to research a topic.	Strongly Disagree 1	Disagree 2	Neither Disagree or Agree 3	Agree 4	Strongly Agree 5

## APPENDIX N

### INCREASES AND DECREASES IN INDIVIDUAL SELF-EFFICACY

#### SCORES

Student Participant	Points Increased or Decreased
Student A	+7
Student B	+1
Student C	+4
Student D	+3
Student E	0
Student F	+2
Student G	-2
Student H	+6
Student I	0
Student J	-7
Student K	+14
Student L	+8
Student M	+2
Student N	0
Student O	+1
Student P	+2
Student Q	0
Student R	+2
Student S	0
Student T	0
Student U	0
Student V	+1
Student W	+2
Student X	+2
Student Y	-1
Student Z	+1



APPENDIX O

INCREASES AND DECREASES IN INDIVIDUAL CONFIDENCE

LEVEL SCORES

Student Participant	Points Increased or Decreased
Student A	+3
Student B	+3
Student C	+2
Student D	+2
Student E	1
Student F	0
Student G	-4
Student H	+5
Student I	0
Student J	0
Student K	-2
Student L	+1
Student M	0
Student N	+4
Student O	-2
Student P	+1
Student Q	-3
Student R	+2
Student S	0
Student T	-1
Student U	+2
Student V	+4
Student W	+1
Student X	0
Student Y	-1
Student Z	+4

## APPENDIX P

### INCREASES AND DECREASES IN INDIVIDUAL ANXIETY LEVEL

#### SCORES

Participant	Points Increased or Decreased
Student A	+3
Student B	+4
Student C	-2
Student D	-3
Student E	-1
Student F	-1
Student G	-1
Student H	-1
Student I	0
Student J	+4
Student K	+3
Student L	-2
Student M	-2
Student N	-3
Student O	-3
Student P	0
Student Q	+2
Student R	-2
Student S	+2
Student T	0
Student U	-2
Student V	-3
Student W	-2
Student X	-2
Student Y	0
Student Z	0